

**T&E**

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# Cleaner Fuels and Lower Sulphur

A position paper  
on  
the revision of  
Directive  
98/70/EC

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**Cleaner Fuels and Lower Sulphur:**

A position paper on the revision of Directive 98/70/EC

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## **Key Recommendations**

- 1. The mandatory availability of 10ppm sulphur should commence in 2003.**
  - 2. The date when 10ppm sulphur fuels become the single mandatory standard should be 2008.**
  - 3. The European Commission should lead a review of other parameters within CAFE and under the 6<sup>th</sup> framework Programme, to ensure these are optimised. This will entail an updating of the EPEFE equations to account for EURO IV vehicle technologies and 10ppm sulphur.**
  - 4. The Articles outlining possible derogations from the sulphur standard in the Directive should be deleted as flexibility is accounted for by the long phase in periods for ultra low sulphur fuels.**
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# 1. Introduction

On the 11<sup>th</sup> of May this year the European Commission adopted a proposal for an amendment to the Directive setting fuel quality standards entering into force in 2005.

In some respects this proposal marks a watershed in Community Policy, being the last of the policy measures that can be said to derive from the Auto Oil Programme. However, in other ways the proposal could also be said to be transition on the way to a more comprehensive Community approach under the new Clean Air For Europe - or CAFÉ - programme.

The proposal is connected to the Auto Oil Programme by the fact that the first Auto Oil Directives only included specifications in the 2005 fuel quality standards for the sulphur content of petrol and diesel and the aromatics content of petrol. This proposal completes these specifications, but it also revises the sulphur standard in a prolonged phased approach. This revision of the sulphur standard is the result of a process that followed completion of the Auto Oil II programme. This stakeholder review addressed the extent to which lower sulphur standards would benefit CO<sub>2</sub> emissions by enabling vehicle manufacturers to market more fuel efficient cars that would still satisfy the 2005 Auto Oil emission standards. It is this element – combining as it does different Community environmental objectives – that could give pointers to the future operation of the CAFÉ programme.

When the Council of Ministers and the European Parliament review this proposal from the Commission there are three things they should bear in mind:

1. maintaining the integrity of the internal market
2. the need to maximise the benefits of the measures in a way that realises benefits for other policy objectives
3. the Article allowing derogations should now be deleted – flexibility is instead provided for in the gradual phase in of the most stringent standards

## 2. Background

### *2.1 The Auto Oil Programme*

There has long been debate over whether it is best to reduce pollution from road vehicles with cleaner vehicle technology or cleaner fuels. In an attempt to resolve this debate the European Commission in partnership with the car industry and the oil industry established the Auto Oil Programme (AOP). This AOP was to find the most cost effective way of reducing traffic pollution so that the EU could meet its air quality objectives.<sup>1</sup> The Directives that were adopted in 1998 as a result of this AOP established new emission standards for both vehicle technology and fuels. There were new standards for cars and vans in 2000 and 2005, alongside a full set of fuel quality standards for 2000 and partial ones for 2005.

Initially for the 2005 step the Commission had only proposed indicative car emission standards and established a second AOP to confirm both their necessity and whether any other measures were needed. However the conciliation agreement between the Council and the European Parliament established the 2005 standards in 1998 rather than await the results of the second AOP and the adoption process once again.

In order to ensure that this agreement was acceptable to all Member States (both their Ministers and their MEPs) the fuel quality Directive had two elements that allowed flexibility in the application of the standards. The first of these flexible elements was the possibility to gain derogations from the most stringent provisions of the Directive – the ban on leaded fuel and the sulphur standards. The second of the flexible elements was the partial rather than complete nature of the standards set for 2005 – only sulphur and benzene levels being set. The full standard containing levels for all the parameters could await the outcome of the second AOP. It is this decision that ensured the Commission would adopt a proposal to revise the Directive to “fill in the blanks” of the 2005 standards.

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<sup>1</sup> For a detailed account of the Auto Oil Programme see “Controlling Traffic Pollution and the Auto Oil Programme T&E 99/8 available from [www.t-e.nu/publications.htm](http://www.t-e.nu/publications.htm)

## ***2.2 The Sulphur Review***

Following the adoption of the Conciliation agreement finalising the Auto oil Directives, the political landscape changed. The driving force for the reduction of sulphur in fuels to this point had been the need to reduce the “classical” pollution levels from traffic. The sulphur levels found in fuels would reduce the effectiveness of emission control equipment such as catalytic converters and cause higher pollution from particles from diesels. Now a new initiative to stem the growth in emissions of CO<sub>2</sub> from traffic placed additional pressure on the need to reduce sulphur levels in fuels.

The Community had adopted a strategy to reduce CO<sub>2</sub> emissions from new cars in 1996, the main element of which was a “voluntary agreement” between car manufacturers and the Commission. It was this agreement – finalised over the same period as the conciliation agreement on the fuels Directive – that largely changed political attitudes on the need to further reduce sulphur levels. If manufacturers were to honour this agreement *without downsizing their model ranges* they would need to use direct injection engines that would require almost zero sulphur fuel. Without the fuel of the right quality these vehicles would not be able to pass the emission standards, especially the EURO IV standards applicable from 2005.

Unfortunately the realisation by Governments that the voluntary agreement would necessitate virtually sulphur free fuel came too late to influence the fuels Directive. As a result the Commission was soon pressured to review the sulphur standard set for 2005 when it prepared the proposal to complete the fuel specifications.

The second AOP should have been able to provide all the information required to enable the Commission to accomplish this task. However, the oil industry was extremely wary of any further tightening of the standards. As a result the relevant working group of the second AOP agreed to limit their investigations to only those parameters that were not covered by the 2005 standards in the Directive. Moreover the element of the original AOP that had established the relationship between improved vehicle technology and cleaner fuels – the European Programme on Emissions, Fuels and Engine technologies (the EPEFE programme) did not examine either the technology the manufacturers would require for the 2005 standard, or near zero sulphur fuels.

In fact the equations relating emissions to improved vehicle technology and fuel parameters were an area of strong disagreement between the oil and car industries in the second AOP despite the fact that the EPEFE programme was a collaborative exercise between them. The contention of the vehicle manufacturers that the equations needed revision was, however, not fully investigated during the second AOP.

Of potential further importance was the fact that the second AOP failed to deliver results that would update the EPEFE results to EURO IV technology and extend it to near zero sulphur fuels. This is important because the fuel parameters the Commission were to assess in order to complete the 2005 specifications had “pollutant trade offs” for fuels and vehicles covered by the original EPEFE results, but that might be considerably reduced or even not exist in EURO IV vehicles using ultra low sulphur fuels. Only using the EPEFE equations one would imagine there to be no benefit or even negative impact from alterations to the other fuel parameters. But this is not based on assessment of the fuels and technology that will be on the market or required in 2005.

Yet for the Commission the over-riding priority was resolving the issue of whether the

sulphur standards so recently agreed needed revision. The Commission was placed in the position of having pressure to review the sulphur standard applied by several Member States – most notably Germany – and no information base upon which to draft a proposal.

The Commission therefore launched a wide ranging consultation exercise on the sulphur content of fuels so as to gain information and opinion from industry, Member State experts, and NGOs. They were then able to review all of this information and base their proposal on a more informed basis than previously.

T&E contributed to this review and our position is presented in full in the Annex to this report. In essence we contend that the second AOP demonstrates that reduced fuel sulphur levels will be necessary in order to reduce traffic generated air pollution. The air quality modelling undertaken in the second AOP clearly demonstrates that Member States will continue to struggle to reduce pollution levels to those required by the air quality Directives, especially for PM<sub>10</sub> and NO<sub>2</sub>. Of the ten cities studied in detail two exceeded the levels required by the air quality legislation and three others only satisfied the standards marginally. Of greater concern was the attempt to model air quality in the most polluted of city streets. Pollution in these “street canyons” was predicted to remain well above the levels the daughter Directive would require. Lower sulphur fuels would aid the situation because they would contribute to the efforts reducing this damaging air pollution quickly. They would have a beneficial effect immediately as all vehicles would use the improved fuels. For this reason T&E advocates improvements to fuels so that Member States have the most assistance from European Product standards to comply with European Air Quality legislative demands.



### ***2.3 The proposal***

The proposal adopted by the Commission on the 11<sup>th</sup> may 2001 therefore had to reconcile several objectives and pressures the Commission faced. On the one hand the calls for a further strengthening of the sulphur standard were strong, both from industry and some Member States. Other Member States, however, have remained fearful that even the current 2005 sulphur standards would be too severe for their refining industry and had sought inclusion of an Article in the Directive allowing derogations from the sulphur standard. Moreover, the information available to the Commission on the relative merits of changing the parameters from those that entered into force in 2000 was incomplete with no data on the influence either of EURO IV vehicle technology or ultra low sulphur fuels emerging from the second AOP.

In an attempt to reconcile these different pressures and information gaps the Commission Proposal included :

- A dual sulphur standard of 50ppm and 10ppm sulphur content to commence in 2005
- An extended phase in of 10ppm sulphur fuels - following mandatory introduction in 2005 10ppm sulphur fuels would only become the single standard by 2011.
- A review of standards by 2006 to ensure all parameters were optimised when information on EURO IV technology and low sulphur fuels became available.

Introducing a tier of flexibility into the provision of ultra low sulphur fuels across the Community is merited, but only if certain conditions are met. The basis for the end of the period of flexibility should not be the ability of individual Member State refining industries to satisfy their home market. Rather it should be based on the ability of the EU refining industry to satisfy the EU market. This is, after all, a Directive based on Articles of the Treaty defining the single Market.

The period of flexibility contained in the Directive by this measure is far too long. The EU demand for ultra low sulphur fuels could be met by EU refiners by 2008 at the latest, yet the Proposal allows the dual standard to continue until 2011.

Moreover the first Mandatory entry point for these fuels should not commence in 2005, but earlier. Manufacturers will be in a position to market the technology to comply with the 2005 well in advance of its compulsory application. Indeed the use of fiscal incentives to promote the early introduction of future technology was the original reason why the Commission proposed a 2005 EURO IV emission standard. Once again, whilst the refining industry in each Member State is unlikely to be able to supply 10ppm standard fuels before 2005, the EU refining industry will be able to supply the EU market well before this period, especially if the demand for the higher grade fuels is low to begin with in some countries. We therefore advocate that the mandatory introduction of 10ppm fuels commence at the start of 2003 in the final Directive.

The proposal also provides for the emergence of a third tier of EU fuel standards to run concurrently from 2005. The instrument used to allow flexibility in the current Directive is the possibility for derogations to be granted from the sulphur standard for both petrol and diesel for a period of two years. Article 3.5 (for petrol) and Article 4.3 (for diesel) of the Directive states that Member States may apply for a derogation from the 2005 sulphur standard of 50ppm if they "can demonstrate that severe difficulties would ensue for its industries in

making the necessary changes". This is the same formulation used for a similar derogation from the 2000 sulphur standards. In that instance only Portugal applied for the derogation which was then granted by the Commission. The 2005 sulphur standard, however, poses a far greater potential problem for refiners, especially in Southern Member States, than the 2000 standards. Application of the derogations would result in a potentially three grades of diesel and three grades of petrol on the EU market concurrently – a situation that ironically results from a Directive harmonising standards in the single market!

Refiners in Southern Member States currently face the greatest difficulty in meeting either the current 50ppm standard or the 10ppm standard to be phased in. This is because they tend to use crude oils with a higher sulphur content to begin with. These "sour" crudes contrast with the typically "sweet" or low sulphur crudes of the North Sea typically used further north in the Community. Refiners in the South therefore face substantially higher investment costs than their northern counterparts even to comply with the 50ppm standard. Moreover the total investment costs will be even higher if they have two investment cycles, one to achieve the 50ppm standard and a second to meet the 10ppm standard. It would make more sense to have only one investment cycle to attain the 10ppm standard immediately – albeit at a higher cost than attaining only the 50ppm standard. In this situation it is likely that refiners in the South could face a competitive disadvantage to their Northern counterparts as they upgrade and re-invest on a large scale.

Yet these investment decisions have been known for a considerable period. A period when the industry itself has seen both slim margins and record profit levels. There is no reason why enterprises should be rewarded with grace periods for the application of market standards when they have had a long lead time and sufficient capital inflows to meet the required standard. To do so would be to punish those competitors who have undertaken the necessary investments, sometimes in periods when margins were slimmer and profits lower.

The single market is frequently cited as environmentally destructive, contributing as it has to the growth in transport and thus its impacts. Exceptions to the application of the single market that protect domestic industries are not made for environmental considerations. They should not be permitted solely for the protectionist aims at the expense of the environment. The elements of the Directive that permit derogations should therefore be deleted. This would improve environmental and health protection, serve the goals of the single market, and prevent a confused market with multiple fuel grades emerging.

### **3. Conclusions and Recommendations**

In order to ensure this single market legislation respects the single market phase in periods need to reflect the ability of the whole EU industry to supply the EU market. This means that the mandatory availability of 10ppm fuels should commence at the start of 2003 rather than 2005. Moreover the date when this 10ppm standard becomes the single standard should be 2008 rather than 2011 as stated in the Commission Proposal.

In order to ensure that all fuel parameters are optimised the Commission should lead a review of other fuel parameters that have remained unchanged in the current proposal. Ensuring that the EPEFE equations are updated to account for the combined effects of EURO IV technology and 10ppm sulphur fuels should be the focus of research conducted as part of the Clean Air For Europe (CAFE) programme under the 6<sup>th</sup> framework Programme.

The flexibility this Directive introduces into the application of sulphur standards with a protracted phase in period of six years (five in our proposed amendments) is sufficient for an industry that already has had a protracted lead time. The sections of the Directive that allow derogations from the 50ppm sulphur standard (Articles 3.5 and 4.3) should therefore be deleted.



# Annex - Section 1

## ***Outlining the T&E response to the review of sulphur levels in fuels.***

Our submission to the review of the sulphur content of petrol and diesel fuels is based around the following major points:

- Auto oil II has demonstrated that low sulphur fuel is necessary for air quality daughter directive compliance in locations across the EU, and remains useful in improving air quality in many others;
- There is a need to protect the integrity of the single market and have low sulphur fuels available across the EU15;
- A distinction needs to be drawn between the marketing of fuel in any one member state, and the assistance granted to its refining industry;
- The variability of the estimated costs and impacts on the refining industry of low sulphur fuels, including from the industry itself;
- It is important to stimulate breakthrough technologies.

Many of these points have not been explicitly raised in the questions posed to us, and so these will be outlined first followed by a point by point response to the questions posed in the review. An important issue that was not raised in the invitation to comment is the degree to which lower sulphur fuels are needed because of remaining air quality problems across the EU. In our opinion, however, this is a most important question to respond to first, as it establishes the framework within which the other questions posed in the call may be answered.

The first question we will address is, therefore;

1. is it necessary to lower the sulphur levels of fuels to improve air quality?

The question in actual fact should be broken down into three elements:

- Will there be air quality problems remaining which lower sulphur fuels could tackle?
- If so of what nature and how widespread are these problems likely to be?
- How cost effective are low sulphur fuels in tackling these problems?

In order to be impartial and use data agreed by all stakeholders our response to these three questions will be based on the results of the Auto Oil II programme.

The first of these questions is rather easy to answer – yes there will continue to be air quality problems in the EU, despite the advances made in large part as a result of the Auto Oil Directives. The Air Quality modelling completed in the Auto Oil II programme was of three broad types:

“bottom up” detailed modelling of ten urban areas to a resolution of 2km<sup>2</sup>;

“top down” modelling of a large number of urban areas across the EU using a Generalised Imperial Approach undertaken by the European Environment Agency;

Detailed modelling of two “street canyons” in Madrid and Berlin.

Each of these approaches concluded that there would continue to be urban air quality problems in the EU. There was also a degree of agreement between the three approaches of the likely scale of improvements to air quality that would result following the first Auto Oil Directives. Responding to question ii therefore requires a closer examination of each of these modelling approaches.

There was some divergence on the scale of the problem, particularly between the two most extensive approaches. The bottom up approach predicted that by 2010 air quality problems will be restricted in scope to only 2 of the 10 cities studied. Moreover of these 2 only 1 – Athens – was predicted to continue to experience serious widespread problems. In contrast the generalised empirical approach of the Agency predicted a far greater frequency of persistent air quality problems. Of course both of these approaches are not actual “predictions” of the future in the strict sense, but are estimations of likely outcomes given a range of assumptions.

The same is true of any model, and so the degree to which the model provides decision makers with an “absolute” answer will vary. In addition to the main “headline” results from the model it is therefore necessary to assess the sophistication of the model, the realism of its assumptions, a likely margin of error, and the other results. Applying this approach to the two Auto Oil II Air quality modelling exercises allows us to assess the likely extent of air quality problems remaining in 2010.

By far the most sophisticated of the two approaches is the bottom up approach of the ten city study undertaken by the JRC. The emissions inventories compiled by each of the contact groups for the cities means that a relatively clear picture was able to be drawn on the level and trend of emissions across all sources, and their probable relationship to air quality. The top down generalised empirical approach of the EEA in contrast is a rather simple modelling tool. This allows the much wider geographical coverage of the EEA approach.

Whilst it is true that the sophistication of a model alone is not an indicator of accuracy *per se*, it is true that the results of the JRC’s ten city study should be viewed as generally more reliable than those of the EEA’s generalised empirical approach. This may lead one to presume that urban air quality problems remaining in 2010 will be rather local in character. We contend, however, that this would be an erroneous conclusion for several reasons.

Firstly there is the case of Lyon. This area was modelled in Auto Oil I and was predicted to have no air quality problems without any Auto Oil I measures. Auto Oil II now predicts – using the same modelling approach – continued NOx air quality problems in 2010 despite Auto Oil I directives. The major change to have occurred in the modelling of Lyon in Auto Oil II compared to the first programme was an improvements of the city’s emissions inventory.

Re-examining the emissions inventory in detail for each of the other ten cities studied would be a major task but necessary if greater confidence is to be placed on the reliability of the results, particularly for those cities where air quality is predicted to only marginally achieve the target values.

The sophistication and complexity of the ten city study is therefore not by itself a guarantee of great precision. Whilst this does not completely undermine the results of the ten city study, it does highlight the fact that the ten city study offers an incite into a possible future air quality situation, rather than offer an accurate prediction of THE future. It is also true that these ten cities were selected on the basis that there was adequate data available, rather than being truly representative of the EU as a whole.

Secondly the results of the EEA generalised empirical approach can not be merely discounted as completely unreliable. They do suggest that continued air quality problems

will be experienced across the EU rather than in limited regions or a few problem locations. Obviously the early stage of development of this approach preclude adopting strong action purely based on its results. However, we believe that the approach has sufficient rigour to merit further examination of the future extent of air quality problems.

Thirdly the results of the street canyon modelling exercise suggest that air quality problems will continue, even in those locations for which the ten city study indicated no problems when air quality is averaged over 2km<sup>2</sup>. This would not necessarily mean that general air quality problems will remain a widespread problem across the EU, as these street canyons could be thought of as local "hot-spots". Indeed this was the rationale in the first Auto Oil Programme. Local hot spots and street canyons were viewed as local problems rather than evidence of a Europe wide problem to be addressed by European measures.

However, an important element of the findings of the air quality modelling on street canyons was that despite continued poor air quality, street canyons were predicted to see a greater improvement than the general improvement to ambient air quality in the ten city study. This improvement to street canyon air quality results not from local measures, but from the improvements to traffic emissions resulting from the Auto Oil I directives.

Street canyon hot spots are widespread urban air quality problems across the EU. The results of the street canyon modelling demonstrates the degree to which European technical measures offer a real reduction in these problems. We believe that this finding demonstrates the extent to which street canyons continue to be a problem across Europe requiring European wide measures.

Moreover, Member States must now comply with Directive 99/30/EC and 96/62/EC. These air quality Directives require compliance at road side locations rather than merely locations that would be comparable to the 2km<sup>2</sup> resolution of the ten city study. This further emphasises the degree to which the "hot-spot" problem of street canyons has a European component rather than being merely a local one.

As a result of these considerations we assert that the continued air quality problems predicted by the Auto Oil II Programme are widespread and European, rather than local, in nature. Whilst local measures will continue to provide part of the solution, further European measures are necessary to allow Member States to combat the problem and comply with the *acquis communautaire*.

This leaves the question of how cost effective each approach is (question iii above), and the degree to which individual measures offer cost effective solutions. The remaining problems for urban areas are particles and NO<sub>x</sub>, so the measures to be considered must address these pollutants. Low sulphur fuels will have a desirable effect on the emissions of both of these pollutants. Furthermore low sulphur fuels are a cost effective measure to combat both of these pollution problems in that the costs associated with them are much smaller than the benefits they would effect, the finding of the last exhaustive independent review of this question. This was a study undertaken by the same consultants the Commission used to assess fuel quality costs in the cost effectiveness analysis during the first Auto Oil Programme, Arthur D. Little. The study, funded by the governments of Finland and Sweden, concluded that the environmental benefits of higher quality fuels – including 10ppm sulphur diesel fuel – were far higher than the additional costs to industry.

The question is, therefore, whether low sulphur fuels are cost effective compared to alternatives. However, the extent to which they are comparatively cost effective depends

not just upon the alternatives to which they are compared, but the time horizon considered. The advantage of low sulphur fuels is that they have an immediate effect on the emission levels from traffic.

Questions relating to costs and effects were addressed in the specific questions posed in the original call and so will be responded to below. It is important to note, however, that low sulphur fuels are a cost effective measure to improve air quality problems of NO<sub>x</sub> and particulate pollution, and the degree to which they offer a comparatively cost effective solution depends on the time horizon considered.



## Annex - Section 2

### *Responses to the questions posed by the European Commission.*

At the start of our submission we outlined five major points upon which our submission would be based.

- Auto oil II has demonstrated that low sulphur fuel is necessary for AQ daughter directive compliance in locations across the EU, and remains useful in improving air quality in many others;
- There is a need to protect the integrity of the single market and have low sulphur fuels available across the EU15;
- A distinction needs to be drawn between the marketing of fuel in any one member state, and the assistance granted to its refining industry;
- The variability of the estimated costs and impacts on the refining industry of low sulphur fuels, including from the industry itself;
- It is important to stimulate breakthrough technologies

1. The magnitude of the additional environmental benefit gained from using petrol and diesel with a sulphur content of less than 50 parts per million. More specifically, what are the incremental benefits of using fuels with a sulphur content of

- (a) 5-10 parts per million and
- (b) 30 parts per million relative to fuels containing 50 parts per million of sulphur?

The response to this question has formed the core of the debate on technical issues in the Auto Oil II programme. T&E does not believe that the information we have at our disposal can shed greater light on this question than the information in the hands of both of the industries. The divide has been between those in the oil industry that largely support the original EPEFE equations and the vehicle manufacturers that would wish to see a revision to the EPEFE equations emphasising the damaging effects of even low sulphur levels on emissions.

Nevertheless, we can state for the record which side of this debate we believe to be the most credible. We believe that there is credible evidence on the impact of low sulphur levels (30-50 ppm) on emissions and that the more advanced control equipment becomes as emission limits are lowered, the greater this effect appears to become. For this reason we advocate a standard of 10ppm in both petrol and diesel.

2. Using a sulphur specification of 50 ppm as a reference, what incremental refining costs are incurred to produce petrol and diesel with a sulphur content of

- (a) 30 ppm and
- (b) 5-10 parts per million?

Because this question was placed beyond the scope of the Auto Oil II programme stakeholders have little access to the costs associated with deliver of these fuel qualities. Unfortunately many in the refining industry have been less than consistent in claims over the costs to individual refineries and the impacts. In support of this assertion we present the case of the Elf refinery in Milford Haven.

During the adoption process of the Auto Oil I directive this refinery was vociferous in asserting that the fuel specifications advocated for 2005 would result in refinery closure. This claim was particularly significant given the UK presidency during the second stage of the adoption process and the conciliation between the Parliament and Council. The refinery lobbied the local MPs to pressure the UK government claiming that the costs of compliance would leave Elf no option but to close the refinery. After adoption of the Directive, however, the Milford Haven Elf refinery rather changed its position. The day after the conciliation agreement was reached the refinery outlined to the Daily Telegraph how they had invested to ensure that they would supply 2005 specification diesel fuel to their entire UK network “by the end of the summer”.

It is not necessarily the case that this was a deliberate strategy to undermine the political process and deceive decision makers. The real explanation is probably the more mundane reason of competition amongst firms in an industry in over supply. Keeping one step ahead of the competition requires that information on costs and their impacts are kept as hidden as possible. The example does highlight, however, the significance of cost confidentiality to the industry, and this seriously undermines any process that is only to be decided upon solely by comparative costs effectiveness.

More generally a report (Costs and Strategies presented by Industries During the Negotiation of Environmental Regulations April 1999) by the Stockholm environment Institute gave a number of examples where industry cost estimates prior to legislation were demonstrated to be significantly greater than the costs they incurred following legislation. This is unsurprising given the power of the free market to innovate and reduce costs.

What is known is that the costs have come down over time as process innovations have continued alongside competition amongst those who supply refinery equipment. It is also clear that there is a large difference between average costs for the industry as a whole, and costs for individual refiners.

Whatever the final impact for refiners of additional quality criteria, a distinction needs to be drawn between the impact on the EU refining industry, and the impact to individual Member State industries of refiners. There will be very different cost implications for refiners that use high sulphur “sour” crude and those using lower sulphur “sweet” crude. There is a split in the EU between refiners using low sulphur crude largely in the north and those using higher sulphur crude largely in the south.

However, there is a need to protect the integrity of the single market and have low sulphur

fuels available across the EU15. A distinction needs to be drawn between the marketing of fuel in any one member state, and the assistance granted to its refining industry. Just as there are limitations on the state aids that can be granted to companies within the single market, so there must be restrictions on the extent to which such state aid is granted through laxer standards for individual Member States via derogations. We therefore believe that the Article outlining derogations from the 2005 specifications needs to be amended and be brought into line with state aid rules.

3. Should the uptake of new emissions abatement technology or fuel-efficient technology be encouraged in the automotive fleet? If so what type of low-sulphur fuel marketing regime would be justified? For example,

- (i) a proportion of the market sold on a voluntary basis,
- (ii) a proportion of the market sold on a mandatory basis or
- (iii) the totality of the market that complies with a sulphur content fixed at a value less than 50 parts per million?

This should be considered in the context of the advancement of traditional petrol and diesel engine emission abatement technology and looking forward towards the introduction of new vehicle propulsion or power-plant technology.

New emissions technology should be encouraged rather than discouraged by the fuel quality Directive. This would mean that 10 ppm sulphur fuels must be not just allowed onto the market by the Directive, but should be mandatorily available. This should occur across the EU as soon as practicable, from the start of 2002. The entire fuel specification should then become 10ppm sulphur from the start of 2005.

4. What are the effects on other petrol and diesel fuel quality parameters of environmental relevance as the sulphur content is reduced from 50 parts per million to less than 10 parts per million?

We have too little data to respond to this question.

5. What are the logistical impacts and investment implications for the distribution system for petroleum products of introducing petrol and/or diesel with a sulphur content of less than 50 parts per million?

The only logistical problem of significance that will occur with a low sulphur fuel being marketed relates to the sales point. Pump availability for the different qualities of fuels will be problematic until after the complete ban on leaded petrol has come into force. The French refining industry have recently offered to utilise the pumps currently supplying lead replacement fuels with cleaner fuels and to sell the lead replacement additive separately to their customers. This would mean that the mandatory availability of 10ppm sulphur fuels would be able to commence from the start of 2002.

6. What will be the overall effect on greenhouse gas emissions of moving to petrol and diesel with a sulphur content less than 50 parts per million? This should take account of changes in emissions in the refining and distribution systems and in the vehicle fleet through the pursuance of CO<sub>2</sub> efficient technologies, the so called “well to wheels” life-cycle effect.

The additional CO<sub>2</sub> emissions from refineries as a result of 10ppm sulphur will partly be offset by the fact that the carbon intensity of the fuel is reduced, thus lowering tail pipe CO<sub>2</sub> emissions. However, there will in our view be – all things equal – a net increase in CO<sub>2</sub> emissions of around 1% “well to wheel”. However, this is massively outweighed by the benefits of more efficient vehicle technology as the entire point of 10ppm fuel is that all things do not remain equal.

# T&E PUBLICATIONS

## 1992

- T&E 92/6 Making Fuel Go Further - a critical evaluation of different political instruments for improving the fuel efficiency of new cars and other light vehicles
- T&E 92/7 External Costs of Air Pollution - the case of European transport

## 1993

- T&E 93/1 Damage Costs of Air Pollution - A survey of existing estimates
- T&E 93/2 Marginal and average costs of reducing nitrogen oxides and sulphur dioxide emissions in Europe
- T&E 93/4 Wanted: a European policy for transport and environment. A response to the Commissions White Paper "The Future Development of the Common Transport Policy"
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## About this paper

The level of sulphur in fuels is key to reduce pollution from road vehicles and allow new more fuel efficient technologies onto the market place. On May 11 2001 the European Commission proposed an amendment to the Directive establishing fuel standards that phases in ultra low sulphur fuels.

This publication argues that this proposal should be amended by the European Parliament and the Council to accelerate the mandatory introduction of these fuels and reduce the phase in period. The publication argues that the single market should mean that the Directive be established on the ability of the EU refining sector to supply the EU market, rather than be based on protecting individual Member State refining industries.

The publication also recommends a review of the other fuel parameters once enough is known on the interaction between new technology and ultra low sulphur fuels. The Publication also includes T&E's submission to the European Commission review of sulphur standards in full.

## About T&E

The European Federation for Transport and Environment (T&E) is Europe's primary non-governmental organisation campaigning on a Europe-wide level for an environmentally responsible approach to transport. The Federation was founded in 1989 as a European umbrella for organisations working in this field. At present T&E has 38 member organisations covering 20 countries. The members are mostly national organisations, including public transport users' groups, environmental organisations and the European environmental transport associations ('Verkehrsclubs'). These organisations in all have several million individual members. Several transnational organisations are associated members.

T&E closely monitors developments in European transport policy and submits responses on all major papers and proposals from the European Commission. T&E frequently publishes reports on important issues in the field of transport and the environment, and also carries out research projects.

The list of T&E publications in the annex provides a picture of recent T&E activities. More information can be found on the T&E web-site: <http://www.t-e.eu>

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