



**Australian Government**

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**Department of the Environment, Water, Heritage and the Arts**

***FUEL QUALITY STANDARDS ACT 2000***

**Management of Diesel Oil Burn Systems**

**Discussion Paper**

Prepared by

**The Department of the Environment,  
Water, Heritage and the Arts**

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## TABLE OF CONTENTS

<b>1.</b>	<b>INTRODUCTION .....</b>	<b>3</b>
1.1	Objectives of the issues paper .....	4
1.2	Process .....	4
<b>2.</b>	<b>BACKGROUND .....</b>	<b>5</b>
2.1	What is an oil burn system? .....	5
2.2	Application of oil burn systems .....	5
<b>3.</b>	<b>THE PROBLEM .....</b>	<b>5</b>
3.1	Compliance with ADRs .....	5
3.2	Compliance with diesel sulfur standard .....	6
3.3	Legal advice .....	6
<b>4.</b>	<b>MANAGEMENT OF OIL BURN SYSTEMS .....</b>	<b>7</b>
4.1	Road vehicles vs non-road vehicles .....	7
4.2	Proposed approach .....	7
<b>5.</b>	<b>NEXT STEPS .....</b>	<b>..8</b>

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Assistant Secretary  
Environment Standards Branch  
Department of the Environment, Water, Heritage and the Arts  
GPO Box 787  
Canberra ACT 2601

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## 1. INTRODUCTION

The *Fuel Quality Standards Act 2000* (the Act) is administered by the Department of the Environment, Water, Heritage and the Arts (the department). The objectives of the Act are to

- (a) regulate the quality of fuel supplied in Australia in order to:
  - (i) reduce the level of pollutants and emissions arising from the use of fuels that might cause environmental and health problems;
  - (ii) facilitate the adoption of better engine technology and emission control technology; and
  - (iii) allow the more effective operation of engines; and
- (b) ensure that, where appropriate, information about fuel is provided when the fuel is supplied.

Under the Act, the Minister for the Environment, Heritage and the Arts (the Minister) has the power to set standards for the quality of fuel supplied in Australia and for information to be provided for consumers in relation to fuel supplies. The Minister also has the power to approve variations to fuel standards in certain circumstances.

The standards are set in determinations made under the Act and penalties apply for breaches of the legislation. Fuel standards have been made for petrol, automotive diesel, biodiesel and autogas and a fuel quality information standard applies to the supply of petrol with up to 10% ethanol.

Section 20 of the Act deals with altering fuel that is the subject of a fuel standard. Under this section, a person (ie a corporation) is guilty of an offence if the person alters the fuel with the intention of using it in Australia and the fuel as altered does not comply with the relevant fuel standard. Section 20 only applies if the person is a constitutional corporation or Commonwealth entity or the person alters the fuel in the course of, or for any purpose incidental to, constitutional trade or commerce.

Oil burn systems in large diesel engines inject small amounts of used oil from the engine into the diesel just before it is burnt in the combustion chamber. The view of the department is that these systems alter fuel for the purposes of section 20. On that basis, the use of these systems could potentially constitute the offence of altering diesel under section 20 of the Act if the injected oil resulted in the diesel no longer complying with the *Fuel Standard (Automotive Diesel) Determination 2001* (the Determination). It is expected that such systems may result in exceedance of sulfur levels set in the fuel standard for diesel.

**Note:** The Department is investigating this issue to determine the most appropriate policy approach in relation to oil burn systems in light of the objectives of the Act. It is not approaching the issue from a regulator's perspective and this paper is, therefore, written *without prejudice* in relation to the current legal position.

## **1.1 OBJECTIVES OF DISCUSSION PAPER**

The objectives of this paper are to:

1. outline the Department's proposed approach to accommodate the use of oil burn systems under the Fuel Quality Standards Act 2000 in certain circumstances;
2. seek information from stakeholders required to implement the proposed solution in terms of further technical information about the operation of oil burn systems;
3. identify suppliers of oil burn systems in Australia;
4. facilitate consultation with affected parties on the solution proposed.

## **1.2 PROCESS**

Key stakeholders will be consulted, including major suppliers of oil burn systems and state and territory agencies. Meetings will be arranged with key stakeholders if necessary. To ensure the consultation process is complete, the department would appreciate all major suppliers of oil burn systems, whether imported or produced in Australia, to contact Lesley Dowling in the Fuel and Used Oil Policy Section. Contact details are provided below.

Any written submissions on the proposed solution in this discussion paper must be provided to Lesley Dowling by **30 May 2008**.

Lesley Dowling  
Director  
Fuel and Used Oil Policy Section  
Department of the Environment, Water, Heritage and the Arts  
GPO Box 787  
CANBERRA ACT 2601  
Ph: (02) 6274 1581 Fax: (02) 6274 1640  
Email: [lesley.dowling@environment.gov.au](mailto:lesley.dowling@environment.gov.au)

## 2. BACKGROUND

### 2.1 WHAT IS AN OIL BURN SYSTEM?

Oil burn systems inject engine sump oil into the fuel line where it is mixed with diesel fuel and burnt in the engine. A typical injection rate is 0.5% or five litres of sump oil per 1000 litres of diesel, however, some systems allow the operator to adjust the oil dosage rate higher. To replace the oil that is burnt, the engine is “topped up” with new oil whenever the vehicle is refuelled with diesel. They are designed for use in machines in demanding operating conditions.

Suppliers claim that oil burn systems improve the overall engine life by both improving the quality of the engine oil between oil changes and increasing the interval between oil changes. They also claim that this increases the availability and productivity of the equipment and assists in reducing the waste oil stream.

### 2.2 APPLICATION OF OIL BURN SYSTEMS

Oil burn systems supplied in Australia can be either optional extras and fitted as part of the machinery when purchased, such as large diesel engines operated at minesites, or retrofitted to diesel engines, including stationary power generators and diesel trucks.

There is, however, the potential for a third category of oil burn system where vehicle operators could tamper with engines making alterations to inject uncontrolled amounts of oil into the diesel before it is burnt in the combustion chamber.

*Stakeholders are asked to comment on any other applications that have not been identified in this paper.*

## 3. THE PROBLEM

### 3.1 COMPLIANCE WITH ADRS

Australian Design Rules (ADRs) implemented under the *Motor Vehicle Standards Act 1989* (MVS Act) specify design standards for vehicle safety and emissions. The Department of Infrastructure, Transport, Regional Development and Local Government (Infrastructure) administers that Act and all ADRs.

The ADRs only apply to *road motor vehicles* defined by the Act as:

- (a) a motor vehicle designed solely or principally for the transport on public roads of people, animals or goods; or
- (b) a motor vehicle that is permitted to be used on public roads.

Infrastructure has confirmed that a vehicle supplied to the market by a manufacturer that incorporates an oil burn system would need to be tested for ADR certification purposes with the system in operation to ensure that the emission limits set by the ADR are still met. While, there are general provisions in the ADRs that require any components on the vehicle that assist the engine in normal use to comply, they do not cover non-road vehicles and

equipment, such as that used in mining and construction. The scope of the MVS Act is limited to road motor vehicles and only at the point of supply by the manufacturer.

In addition, there is a general requirement under state regulations that the ADR compliance of a vehicle must not be affected by any modifications to the engine while in-service. The modification of an engine to apply an oil burn system in road motor vehicles would, therefore, compromise ADR compliance.

### **3.2 COMPLIANCE WITH DIESEL SULFUR STANDARD**

Fuel quality standards have been introduced to control those parameters of fuel that have a direct impact on emissions and to also facilitate the advanced emissions control technology required to meet more stringent ADRs. Sulfur levels are a critical parameter in this regard.

Prior to 1 January 2006, when sulfur levels in diesel were regulated at a maximum of 500ppm, it was unlikely that the amount of oil injected into the diesel would have resulted in sulfur levels exceeding the diesel sulfur standard. With the introduction of the ultra low sulfur (50ppm) diesel standard from 1 January 2006, however, use of oil burn systems would most likely result in the sulfur content of the diesel exceeding the regulated cap.

Engine oil is typically very high in sulfur and the addition of engine oil to diesel, even at a low 0.5% dose rate, is expected to exceed 50ppm. The mandated sulfur level in diesel drops further to 10ppm from 1 January 2009. With sulfur at this level in diesel, small amounts of used oil injected into the fuel could significantly compromise the standard.

### **3.3 LEGAL ADVICE**

The department's view is that the use of these systems could potentially breach section 20 of the Act where the fuel as altered by the system no longer complies with the applicable fuel standard.

Sub-section 20(1) provides that a person is guilty of an offence if:

- (a) the person alters in any way fuel in Australia that is the subject of a fuel standard *and*
- (b) the person is a constitutional corporation or a Commonwealth entity or the person alters the fuel in the course of, or for any purpose that is incidental to, constitutional trade or commerce *and*
- (c) the person alters the fuel with the intention of using it in Australia *and*
- (d) the fuel as altered does not comply with the base standard (whether or not the fuel complied with that standard before the alteration); *and*

(e) if:

- (i) the fuel was supplied to the person in Australia *and*
- (ii) any person held an approval varying the standard in respect of that supply

the fuel as altered does not comply with that standard as varied (whether or not the fuel complied with that standard as varied before the alteration).

It is the act of altering fuel that triggers an offence under section 20 of the Act. A person can be guilty of an offence even if the fuel is altered within a piece of engine equipment.

Fuel is defined in sub-regulation 3(2) of the *Fuel Quality Standards Regulations 2001* to include automotive diesel.

Sub-section 20(2) of the Act provides that “ For the purposes of subsection (1), *base standard* means the standard determined under section 21”. Under the Act there is a fuel standard for automotive diesel.

For a person to be guilty of an offence under section 20, however, there is no requirement that the person carry out the act of supply. Section 12 of the Act relates to the supply of fuel and section 12A relates to information that must be provided in relation to the supply of fuel. For a person to be guilty of an offence under section 12 or section 12A, the person must ‘supply’ fuel in Australia. Supply is defined in the Act as “supply (including re-supply) by way of sale, exchange or gift”.

## **4. MANAGEMENT OF OIL BURN SYSTEMS**

### **4.1 ROAD VEHICLES VS NON-ROAD VEHICLES**

State legislation already effectively controls the use of these systems in road vehicles by prohibiting any alternations to the engine that would result in non compliance with ADR vehicle emission standards.

As ADR emissions standards do not apply to non-road vehicles, it would appear to be inconsistent to ban oil burn systems through the FQS Act. It is, therefore, important to consider how they should be managed in light of the legal advice that their use could potentially result in a breach of section 20 of the FQS Act.

The Minerals Council of Australia has advised that mining projects in the order of \$150 billion are planned nationally and oil burn systems could remove at least one million litres of used oil from the system annually.

### **4.2 PROPOSED APPROACH**

It is, therefore, proposed to amend the *Fuel Standard (Automotive Diesel) Determination 2001* to allow for the use of oil burn systems in non-road vehicles. There needs to be a balance, however, between allowing the use of oil burn systems and maintaining the

integrity of the diesel standard. To ensure that this balance is achieved it will be important to ensure that adjustments of the levels specified for the various parameters in the standard are minimal and only as far as is necessary to facilitate the use of oil burn systems in these vehicles.

In order to amend the Determination, the Department requires information from stakeholders on a number of technical questions in order to determine what amendments are required to the Determination.

***Stakeholders are asked to comment on the following three questions:***

- 1. Which parameters would need to be adjusted ie sulfur, ash, density, distillation etc to allow the use of oil burn systems?***
- 2. What are the minimum levels to which the identified parameters need to be adjusted?***  
It has been suggested that sulfur levels would only need to be 70-80ppm – the current standard of 50ppm will be tightened to 10ppm in 2009; and
- 3. How can the standard, as amended, be monitored from an enforcement perspective?***  
The Department would need to be able to sample diesel from the engine that had been injected with the used oil to determine if the diesel complied with the levels set for the use of oil burn systems.

## **5 NEXT STEPS**

The Department will assess information provided in written submissions and consider how the Determination needs to be amended. The proposed management approach will then be discussed with key stakeholders and further information gathered through the consultation process will be considered before finalising a recommendation to the Minister on the amendments required to the Determination.