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Engine emissions from non-road mobile machinery: changes to regulatory regime on the horizon



**BY JOANNE
ATTWOOD**
senior
associate,
Burges
Salmon LLP



**BY MICHAEL
BARLOW**
partner,
Burges
Salmon LLP

NON-ROAD MOBILE MACHINERY (NRMM), which covers a wide array of different types of machinery from construction machinery and locomotives to garden equipment, is currently subject to specific air quality legislation. This article outlines the current regime and then discusses new European Commission proposals for a revision of the EU-wide law applied to NRMM. The changes are of particular importance to manufacturers and distributors of engines for NRMM along with end users of NRMM across a number of different sectors.

LEGISLATIVE AND POLICY BACKGROUND

The World Health Organisation estimates that millions of people per year are dying prematurely as a result of air pollution, with 3.7 million premature deaths in 2012 alone¹. The main causes of air pollution vary greatly depending on regional factors. One contributor to air quality deterioration has been the rise of the use of diesel-powered machinery, particularly NRMM. Engines installed in NRMM constitute roughly 15% of the nitrogen oxide (NOx) and 5% of the particulate matter (PM) emissions in the EU.²

In terms of the wider legislative and policy background, in 2008 the Air Quality Directive (Directive 2008/50/EC) came into force in Europe, with the aim of minimising the effects of air pollution for indoor and outdoor air quality by setting broad scope standards requiring member states actively to assess and manage levels of air pollutants. In the UK, Part IV of the Environment Act 1995 requires the government to produce a National Air Quality Strategy (NAQS) which outlines a framework for approving UK air quality, sets maximum standards for major air pollutants and puts measures in place to achieve those standards within the framework. The current NAQS was published in 2007³.

In April 2009, the EU adopted a package of climate change and energy legislation which was aimed at reducing greenhouse gas emissions in the EU by 20% by 2020. Part of this package is to decrease the percentage of emissions generated from NRMM.

CURRENT POSITION

Europe-wide regulation of NRMM is currently under the NRMM Directive 1997 (1997/68/EC)⁴, which is narrower in scope than the Air Quality Directive and has

technical requirements specific to NRMM. The 1997 Directive requires that, in order to be placed on the EU market, engines for use in NRMM must be approved to demonstrate compliance with specific pollutant emission limits.

The 1997 Directive was implemented in the UK by the Non-Road Mobile Machinery (Emission of Gaseous and Particulate Pollutants) Regulations 1999 (the Regulations). The Regulations apply to new engines to be installed in NRMM intended to move or to be moved on the ground, on or off road. The Regulations impose pollutant limits for NOx, hydrocarbons, PM and carbon monoxide and cover different categories of machines. The Regulations implemented the 1997 Directive in stages according to different categories of pollutants and machines.

SCOPE: WHAT IS NRMM?

The basic position under the Regulations is that NRMM is defined as any mobile machine, item of transportable industrial equipment or vehicle (with or without body work) that is not intended for carrying passengers or goods on the road and which is installed with an internal combustion engine. Examples of NRMM include:

- garden equipment (eg hedge trimmers and chainsaws);
- generators;
- bulldozers;
- construction machinery (eg mobile cranes and fork lift trucks); and
- locomotives.

In the UK, the Regulations set the engine emission standards for carbon monoxide, hydrocarbons, nitrogen oxides and (for diesel engines) PM. To broaden their scope and improve air quality incrementally, the Regulations were amended in 2004 to include small spark ignition engines such as chainsaws and hedge trimmers and again amended in 2006 to include rail cars and inland water vessels. There are exemptions set out in the Regulations based on size and use of equipment and the Regulations do not apply to aircraft, agricultural or tractor engines.

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CURRENT REQUIREMENTS

The basic position under the Regulations is that they require manufacturers of engines to mark such engines with a trade mark (or trade name), engine type, engine family (if applicable) and a unique ID number and EC approval number. The engines must then be ‘type-approved’ by the relevant accredited body, which is the Vehicle Certification Agency (VCA) in the UK.

In order to sell NRMM in the UK the equipment must only use engines that have been type approved by the accredited body in an EU member state. The main approval marking is via a form of approval number found as a mark secured to an engine part that is durable for the life of the engine.

OFFENCES

There are various offences under the current Regulations⁵, which include:

- Placing an engine on the market that does not satisfy the specific requirements set out in the Regulations⁶.
- Failing to send a list satisfying Regulation 11(3) when required by the secretary of state to do so. Broadly, a Regulation 11(3) list must set out various details for each engine type or family regulated by the Regulations, both currently and no longer in production.
- Failing to maintain records of the information provided in a Regulation 11(3) list for a minimum of 20 years.
- Failing to make a declaration specifying the engine types and families (together with the relevant engine identification codes) which the manufacturer intends to produce from the date of the declaration.
- Failing to permit the secretary of state to carry out tests and inspections of

any engine bearing a type approval number in order to verify that the engine conforms to the description given on the relevant approval certificate.

There are also offences relating to intentionally or recklessly making false statements or producing false documents for the purposes of the Regulations.

The maximum penalty for supplying NRMM with an engine that has not been approved is a fine not exceeding the statutory maximum, which in England, Wales, and Northern Ireland is £5,000 and in Scotland is £10,000. The maximum penalty throughout the UK for the other offences under the Regulations is £5,000.

There are also related potential breaches of the Consumer Protection Act 1987, which carry sanctions of imprisonment, product recall and product replacement.

PROPOSED CHANGES TO THE REGIME

In spite of increased controls on NRMM, NO_x and PM emissions are increasing, largely due to the increase in number of machines in use and also due to the delay in reduction of diesel-powered NRMM emissions as compared with road vehicles⁷.

The European Commission has stated that the current 1997 Directive is inadequate as it fails to keep up with technological advances seen on the market today, does not include all categories of NRMM engines and insufficiently limits diesel emissions. The European Commission considers emissions from diesel engines to be best regulated by setting a particle number (PN) limit for both fine particles and ultra-fine particles as is the case for road vehicles⁸.

On 25 September 2014, the European Commission published a new draft Regulation (the New Draft Regulation)

relating to NRMM to tighten controls on the emissions limits to help meet EU air quality targets. The proposals will repeal the complex 1997 Directive, which comprises 15 annexes and eight amendments. The proposals are in the form of a regulation rather than a directive to allow for a more consistent, streamlined and harmonised adaptation into national law. The New Draft Regulation is currently being put before the European parliament and council for approval and if implemented will make significant amendments to the types of machinery regulated, the forms of regulations, penalties and the emissions targets for NRMM. The aim is to simplify the existing legislation, keep up to date with the advances in technology, and ensure that regulations for different types of NRMM remain targeted and straightforward.

EXTENDING THE SCOPE

The New Draft Regulation proposes regulating several engine types not previously covered by the Directive. For example, the current regulations are limited to compression ignition (CI) engines with power between 19kW and 560kW but the New Draft Regulation proposals could significantly extend the scope to cover CI engines of both lower and higher power levels. Stationary engines (eg generators), specific large spark ignition (SI) engines above 19kW and snowmobile engines could also come under the scope of the new EU law. In some cases, such as for snowmobile engines and constant speed engines below 19kW or above 560kW, the Commission also deems it appropriate to align the EU emissions limits with the stricter standards of the US⁹.

The Commission’s proposal of retrofitting old machinery with newer regulation-compliant engines was met with industry objection but some commentators note that it is hard to see how any revised regulations can keep up to date with advances in technology without being retrospectively applied to older machinery. Campaigners have emphasised that such an omission could result in market distortions since the unregulated NRMM may be more attractive to buyers than regulated NRMM¹⁰. One compromise discussed was to require from a particular date the retrofitting of engines in NRMM and to ban from a particular date the use of engines that have not been approved to the current standard.

MORE STRINGENT EMISSIONS LIMITS

The new proposals set out more stringent emissions limits for internal combustion engines installed in NRMM, seeking to harmonise the rules for the use and placing of those engines on the EU market. Although the current definition of NRMM is wide in scope, it is envisaged that the proposals will apply specifically to machines not currently regulated, such as large SI engines.

PN LIMITS

The New Draft Regulation proposes to set PN limits which regulate the number of PM present in the air/emissions regardless of their size. This would be an amalgamation of the PN limits currently in force, which regulate PM based on size as well as a PN number. However, under the proposal, the Commission have exempted several categories of machinery from the PN limits. This includes the engines of the largest land machines, smallest inland water vessels and engines installed in locomotives. Environmentalists see these exemptions as loop holes and recommend that the PN limits should be applied to all NRMM types, especially diesel machines as is the case with diesel-powered road vehicles.

PENALTIES

The New Draft Regulation allows for member states to impose penalties for infringement based on the act of infringement as long as the penalties are 'effective, proportionate and dissuasive'¹¹ and it will be up to each member state to inform the Commission of the penalty provisions imposed.

Non-compliance will be identified through market surveillance by the relevant authority in each member state and by assessing complaints made to the Commission¹².

TIMINGS GOING FORWARD

At the time of writing, no date for reading/consideration of the New Draft Regulation has been published nor an indication of when it will be passed. However, the New Draft Regulation¹³ sets out the intention that it should come into force from the twentieth day following its publication in the Official Journal of the European Union and apply to repeal the 1997 Directive from 1 January 2017. Manufacturers will then have two to four years of transition time depending on the engine type and category. These dates are

listed in Annex III of the New Draft Regulation after which time the new type approval and emissions limits will apply. Before the date stated in Annex III, engines which already have EU type-approval under the existing system can continue to be placed on the market until the relevant date listed in Annex III and, until this date, the member state authorities can continue to grant EU-type approval to engines under the existing system.

Industry representatives have campaigned for longer lead-in times on the implementation of these new proposals. However, the Commission has put forward a shorter lead-in time to ensure efficiency and effectiveness of the legislation.

WHO SHOULD BE CONCERNED WITH THESE CHANGES?

The changes will apply to both small and large engines of NRMM. The proposed new regulations, once implemented, will have an impact on the manufacturers and distributors of engines as well as end users. It will be important for the regulations to be sufficiently considered at the development, design and/or production stages.

End users of NRMM may also be affected by the changes in additional fuel consumption increasing operational costs as well as additional maintenance costs of cleaning and replacing enhanced particulate filters¹⁴.

Companies affected by the changes in legislation should be aware of the financial and logistical strain that the new regulations may put on their businesses. This could include a longer build-out time for redesigned engines, adjustment in operating profits to account for the increased cost of fitting enhanced particulate filters to machines, a delay in the approval of engines by the VCA and increased demand on suppliers for NRMM that comply with the new regulations.

CONCLUSIONS

Air quality is a growing concern throughout the EU. The shortcomings of the 1997 Directive are well-documented and the recent European Commission proposals are a sign of change and a commitment to improving air quality across the EU with respect to NRMM. The EU considers that this change marks the beginning of a truly harmonised approach not only to NRMM emissions limits but also to the regulation

NOTES

- 1) World Health Organisation factsheet: <http://www.who.int/mediacentre/factsheets/fs313/en/>.
- 2) European Commission press release *Cutting emissions and cutting red tape: a new regulation for off-road engines*, 25 September 2014.
- 3) NAQS document: July 2007.
- 4) Directive 97/68/EC of the European Parliament and of the Council of 16 December 1997 on the approximation of the laws of the member states relating to measures against the emission of gaseous and particulate pollutants from internal combustion engines to be installed in non-road mobile machinery.
- 5) See Regulation 17.
- 6) Regulations 3B, 4, or Schedule 9 (as appropriate).
- 7) *Impact Assessment of Revision of Directive 97/68/EC*, Eur-Lex document.
- 8) *Stakeholder Consultation on Revision of Directive 97/68/EC*, Eur-Lex document.
- 9) *Stakeholder Consultation on Revision of Directive 97/68/EC*, Eur-Lex document.
- 10) 'Air pollution rules for NRMM', Euractive website.
- 11) Draft Regulation, Article 56
- 12) European Commission *Executive Summary of Impact Assessment* (25 September 2014): <http://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:52014SC0281&from=EN>.
- 13) Draft regulation, Annex III.
- 14) 'Air pollution rules for NRMM', Euractive website.

of air quality as a whole. Following the adoption of the Commission's proposals, the EU limits in this area will be aligned with the more stringent standards of emissions seen in Japan and the US.

While the implementation date for change is not yet set, businesses should be aware of the potential changes afoot in this area and monitor developments which will have operational impacts in due course.

*By Joanne Attwood, senior associate, and Michael Barlow, partner, Burges Salmon LLP.
E-mail: joanne.attwood@burges-salmon.com;
michael.barlow@burges-salmon.com.*