



J R C T E C H N I C A L R E P O R T S

State of the Art Report on European Legislation relating to Explosives and Explosive Detection System for non-aviation configurations

ERNICIP PROJECT

*Thematic Group Detection of Explosives
Materials for Operational Needs (DEMON)*

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Task 4

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Contents

1.	Introduction	4
2.	The Explosives for Civil Uses Directives	5
3.	The Dual Use Regulation	5
4.	Pyrotechnics Directive	6
5.	Registration, Evaluation, Authorisation and Restriction of Chemicals Regulation (REACH)	6
6.	Classification and Labelling of Substances and Mixtures Regulation	6
7.	The Fertilizer Regulation	7
8.	Plant Protection Products Regulation	7
9.	The Seveso III Directive	8
10.	Industrial Emissions Directive	8
11.	Port Security Directive	8
12.	International Inland Transport Agreements and their Implementation in EU	8
13.	Explosives Precursors Regulation	9
14.	Basic Safety Standards for Ionizing Radiation (BSS)	10
15.	Optical Radiation Directive	10
16.	Recommendation on Exposure to Electromagnetic Fields	10
17.	Low voltage and Electromagnetic Compatibility Directives	11
18.	Standards for explosives for civil use	11
19.	Defence standards	11



Abstract

This report summarises European legislation relevant to explosive detection equipment, apart from that contained in the Aviation Security regulations. Although few other articles of European Union law directly refer to explosive detection, a number of directives and regulations are relevant to it, in the fields of explosives for civil use and pyrotechnics, dual-use equipment, chemicals and the chemical industry, port and inland transport security, and radiation, electromagnetic and electrical safety. Future European legislation in this field may be expected to conform to the principles of the EU's New Legislative Framework, according to which harmonised standards are used to express detailed technical specifications. Current standardisation work is therefore also briefly described.



1. Introduction

There has long been a significant *acquis communautaire* concerning the safety of, and regulation of trade in, civil explosives and other explosive materials which have legitimate uses. Following the Maastricht and Lisbon Treaties, which greatly strengthened EU integration in security and counter-terrorism policy, there have also been initiatives aimed at combatting malicious use of explosives. By far the most developed part of the *acquis* in this field is for civil aviation.

This present note summarises the situation for other contexts.

The [EU Action Plan on Enhancing the Security of Explosives of 2008](#) defined a wide-range of measures, some of which involve new legislation and amendments to existing legislation. They are much more specific than the general measures stated in the [EU Counter-Terrorism Strategy](#).

A number of recommendations in the Action Plan concern detection equipment but there is very little actual legislation specifically pertaining to it, outside aviation. General legislation concerning the single market and health and safety, including radiation safety, is applicable. Future European legislation in this field may be expected to conform to the principles of the EU's [New Legislative Framework](#) according to which, specific product legislation should, wherever possible, avoid going into technical detail but should limit itself to the expression of essential requirements. Harmonised standards are used to express detailed technical specifications. The onus is on manufacturers and importers ensure conformity, and indicate it by means of the CE mark. In certain circumstances the conformity assessment procedures prescribed by the applicable legislation require the intervention of conformity assessment bodies, which are notified by the Member States to the Commission. The list of these may be found on the database [NANDO](#) (New Approach Notified and Designated Organisations).



2. The Explosives for Civil Uses Directives

[Council Directive 93/15/EEC](#), on the harmonization of the provisions on the placing on the market and supervision of explosives for civil uses, sets safety requirements for explosives, and security controls on their transfer. Member States must allow explosives which comply with its provisions to be placed on the market, and must not allow explosives which are non-compliant to be placed on the market.

[Commission Directive 2008/43/EC](#) set up a system for identification and traceability of Explosives for civil uses. [Commission Directive 2012/4/EU](#) is an amendment exempting detonators from the labelling rules, because the industry has objected that they are technically difficult to label.

[Commission Proposal COM \(2011\) 771](#) advocates amending Directive 93/15/EEC to make it compliant with [Parliament/Council Decision No 768/2008/EC](#) establishing a common framework for the marketing of products, part of the New Legislative Framework. Some Member States have already notified the Commission of [conformity assessment bodies for explosives for civil uses](#) .

Details of the transcription into national law are available on the [Chemicals-Explosives webpage](#) of the European Commission Directorate-General for Enterprise and Industry.

3. The Dual Use Regulation

[Council Regulation \(EC\) 428/2009](#) setting up a Community regime for the control of exports, transfer, brokering and transit of dual-use items, is aimed at preventing illicit manufacture of CBRN weapons of mass destruction. The control lists include certain conventional high explosives and detonators and explosive trace detection equipment.



4. Pyrotechnics Directive

[Parliament/Council Directive 2007/23/EC](#) on the placing on the market of pyrotechnic articles is designed to establish rules for a single-market in pyrotechnics, whilst ensuring high levels of health, safety, security and environmental protection. Categories of pyrotechnics and age-groups for their sales to minors are defined in the Directive itself. In other respects, it is based on the New Legislative Framework, again with conformity assessment carried out by bodies notified by the Member States. The list of [notified conformity assessment bodies for pyrotechnics](#) may be found on the NANDO database.

5. Registration, Evaluation, Authorisation and Restriction of Chemicals Regulation (REACH)

[Parliament/Council Regulation \(EC\) 2006/1907](#)

REACH (Entry 58 Annex XVII) has been amended by [Parliament/Council Decision 1348/2008/EC](#) and [Commission Regulation 552/2009](#) so that mixtures containing ammonium nitrate, with more than 16% by weight nitrogen from ammonium nitrate (i.e. 46% AN) may not be sold to the general public¹. Member States may apply a limit of 20% within their own territory. Professional use of higher concentrations, including as an industrial explosive, is allowed.

6. Classification and Labelling of Substances and Mixtures Regulation

[Parliament/Council Regulation 1272/2008/EU](#) incorporates into Community law the UN Globally Harmonised System of Classification and Labelling of Chemicals. It contains detailed and specific instructions for explosives and pyrotechnics, including use of the exploding bomb pictogram:

¹ Decision 1348/2008 was originally an amendment to the Dangerous Substances Directive 769/1976 (EEC). Since the latter is now replaced by REACH, Regulation 552/2009 amended REACH to make it consistent.



7. The Fertilizer Regulation

[Parliament/Council Regulation \(EC\) 2003/2003](#) relating to fertilizers, contains provisions regarding explosive hazards which mainly concern the risk of accidental explosions, rather than terrorist acts. It defines in detail detonation test methods for ammonium nitrate-based fertilizers formulations with more than 28% nitrogen from NH_4NO_3 by mass, corresponding to an 80% pure mixture. An amendment, [Commission Regulation \(EC\) No 1020/2009](#), includes technical changes to the methods for measuring nitrogen content in ammonium nitrate fertilizer.

The Commission intends to revise Regulation (EC) No 2003/2003 and to extend its scope. According to a preparatory study, the above concentration limit is perceived by stakeholders as justified.

8. Plant Protection Products Regulation

[Parliament/Council Regulation \(EC\) No 1107/2009](#) of the European Parliament and Council defines the procedure for establishing the EU approved list of plant protection products. It is relevant because it is the current legal basis on which the weed_killer, and explosive precursor, sodium chlorate is no longer approved for sale in the EU. The motives for withdrawing it were primarily toxicity-safety and environmental, but security arguments were also raised in discussions.

(This Regulation supersedes and repeals Council Directives 79/117/EEC and 91/414/EEC.)

9. The Seveso III Directive

[Parliament/Council Directive 2012/18/EU](#) on control of major-accident hazards involving dangerous substances, is the third version of the main EU law in this field, commonly called the Seveso Directive. It includes provisions covering risks arising from explosive substances and from the storage of ammonium nitrate, potassium nitrate and fertilizers based on them.

10. Industrial Emissions Directive

Explosives manufacture is listed in [Parliament/Council Directive 2010/75/EU](#) amongst the industrial sectors to which many of its most important measures apply.

11. Port Security Directive

[Parliament/Council Directive 2005/65/EC](#) on enhancing Port Security does not make detailed provisions concerning explosives but does require that procedures for dealing with established security concerns, including bombs, are defined in a Port Security Assessment.

12. International Inland Transport Agreements and their Implementation in the EU

Recommendations covering the transport of dangerous goods, including explosives, are issued and regularly revised by the Committee of Experts on the Transport of Dangerous Goods of the United Nations Economic and Social Council (ECOSOC). Agreements to implement these in greater Europe are negotiated at the United Nations Economic Commission for Europe (UNECE), which is the regional subsidiary body of ECOSOC, and at the Intergovernmental Organisation for International Carriage by Rail (OTIF), which includes states in Europe, the Middle East and North Africa. The agreements are:

- [European Agreement concerning the International Carriage of Dangerous Goods by Road \(ADR\)](#), 1957, amended 1993.



- [European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterway \(ADN\)](#), 2000
- [Regulations concerning the International Carriage of Dangerous Goods by Rail \(RID\)](#), 1999, which is an annex to the Convention concerning International Carriage by Rail (COTIF).

ADR, ADN and COTIF/RID all require that dangerous goods, including specifically explosives, are packaged and labelled in an agreed manner for transport and the vehicles, including containers, tanks etc. satisfy certain rules regarding their construction, equipment and operation.

ADR also places requirements for training of crew. ADN also addresses requirements and procedures for inspections, the issue of certificates of approval, recognition of classification societies, monitoring, and training and examination of experts.

The above international agreements are implemented in the EU by [Parliament/Council Directive 2008/68/EC](#). Some Member States have been granted derogations concerning transport of explosives, under Commission Decision [2011/26/EU](#).²

EU Legislation is intended to be updated to reflect changes in the International agreements.

13. Explosives Precursors Regulation

Under [Parliament/Council Regulation 98/2013](#), uncontrolled sales of certain chemicals which may be used to make explosives, to members of the general public are prohibited, above given concentrations—. Member states may allow sales of higher concentrations to licensed legitimate users or, for a subset of the precursors, may allow registered sales. All sales of these chemicals and their mixtures are subject to reporting of suspicious transactions, as are sales of chemicals from a second list, for which concentration thresholds cannot be set. Voluntary measures

² Another recent amendment, Commission Directive 2010/61/EU merely introduced a minor change of wording.



by industry and the retail sector to enhance security and raise awareness in the entire supply chain are also required and are now under development.

The following radiation safety legislation applies to explosive detection systems which employ radiation of different kinds:

14. Basic Safety Standards for Ionizing Radiation (BSS)

Use of X-rays, gamma rays and particulate radiation in explosive detection systems is subject to [Council Directive 96/29/EURATOM](#) laying down basic safety standards for the protection of the health of workers and the general public against the hazards arising from ionizing radiation. In May 2012 the Commission adopted a proposal for an updated Directive , [COM\(2012\) 242](#), to align European law with the 2007 recommendations of the International Commission on Radiological Protection (ICRP), including requirements for justification, regulatory control, dose constraints and dose limits. As far as explosive detection systems are concerned, a significant change is that security applications would be specifically mentioned in the Directive text.

15. Optical Radiation Directive

[Parliament/Council Directive 2006/25/EC](#) sets out limits for exposure of workers, and employers' obligations concerning infrared, visible and ultraviolet light radiation, defined as the 100 nm to 1 mm wavelength range.

16. Recommendation on Exposure to Electromagnetic Fields

[Council Recommendation 1999/519/EC](#) on the limitation of exposure of the general public to electromagnetic fields (0 Hz to 300 GHz), advocates a system of basic restrictions and reference levels for limiting overall exposure of the general public to electromagnetic fields and ensuring an increased level of protection.



The above legislation applies throughout the EU. Some Member States have stricter rules, including prohibiting outright the use of X rays for non-medical human body imaging.

17. Low voltage and Electromagnetic Compatibility Directives

Since almost all explosive detection systems are electronic devices, they are subject to the relevant EU harmonization legislation: [Parliament/Council Directive 2006/95/EC](#) relating to electrical equipment designed for use within certain voltage limits and [Parliament/Council Directive 2004/108/EC](#) relating to electromagnetic compatibility. Both of these predate the New Legislative Framework, but the Commission has made proposals to align them with it, and some Member States have given notification of conformity assessment bodies (see [NANDO](#) database).

As mentioned above, under the New Legislative Framework harmonised standards are expected to play a more prominent role in the technical aspects of European security legislation in future. The following activities merit specific mention:

18. Standards for explosives for civil use

A list of harmonized European standards for explosives for civil use was published officially in 2006, as part of the implementation of [Council Directive 93/15/EEC](#) described in paragraph 1.

19. Defence standards

Standards pertaining to explosives used for defence purposes could also be relevant in a civilian context. A comprehensive, publicly accessible database - [the European Defence Standards Reference System \(EDSTAR\)](#) – has been established by the European Defence Agency.

Recommendations for best practice in two relevant areas: energetic materials and disposal of munitions are included in the European Defence Procurement Handbook (CEN Workshop Agreement 15517, from CEN Workshop 10). Reports from the expert groups who worked on these subjects are available on EDSTAR.



20. Security standards mandate

In September 2011 the European standardisation bodies CEN/CENELEC and ETSI accepted from the Commission [Mandate M/487](#) to establish security standards. Explosives, counter-terrorism and land/sea borders and checkpoints are all mentioned as possible areas for analysis. Following the publication of a preparatory study, from January 2013 work focused on drafting roadmaps to interoperability standards, equipment performance standards, minimum detection standards and organizational standards. Priority sectors are: Chemical, biological, radiological, nuclear and explosives (CBRNE) threats; border security; crisis management/civil protection. Work concerning explosives, including proposals for setting minimum detection and sampling standards, has been allocated to the CBRNE workshops.

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