



Merchant Shipping and Fishing Vessels (Health and Safety at Work) (Chemical Agents) Regulations 2010 as amended Implementation of Directive 2017/164/EU (4th IOELV Directive)

Notice to all Shipowners, ship managers, employers, masters, seafarers and fishermen

This notice should be read with the Merchant Shipping and Fishing Vessels (Health and Safety at Work) (Chemical Agents) Regulations 2010 as amended, MGN 409(M+F) and MGN 454(M+F).

Summary

- Directive 2017/164/EU (4th list of Indicative Occupational Exposure Limit Values (IOELVs) comes into force on 21 August 2018.
- The Directive introduces new and amended IOELVs for 31 substances, which have been implemented in the UK in the latest edition of HSE's document EH40/2005 and have effect for UK ships under the Merchant Shipping and Fishing Vessels (Health and Safety at Work) (Chemical Agents) Regulations 2012.
- For ease of reference, the Annex to this Marine Guidance Note gives notice of the revised IOELVs.
- Information is included on those substances considered most likely to be found on UK ships.

1. Background

- 1.1 The Merchant Shipping and Fishing Vessels (Health and Safety at Work) (Chemical Agents) Regulations 2010 (SI 2010/330) (the "Chemical Agents Regulations 2010") which came into force on 6 April 2010, implemented EC Directive 98/24/EC (the "Chemical Agents Directive"), as supplemented by Directives 2000/39/EC and 2006/15/EC. They introduced requirements for the protection of workers from the risks related to exposure to hazardous chemical agents at work which the Health and Safety Executive (HSE) and the



Health and Safety Executive for Northern Ireland (HSE(NI)) have already implemented for land-based workers.

- 1.2 In 2012, the Chemical Agents Regulations 2010 were amended to transpose Directive 2009/161/EU, which established Community indicative occupational exposure limit values (IOELVs) for another 18 chemical agents, and a revised Community indicative occupational exposure limit value for Phenol. The additional chemical agents for which exposure limit values have been established are listed in the Annex to MGN 454. The actual limits for those additional chemical agents, and the revised limit for Phenol, are set out in the Annex to Directive 2009/161/EU which can be found on the Eur-Lex website at: <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:338:0087:0089:EN:PDF> .

2. Implementation of Directive 2017/164/EU (the 4th IOELV Directive)

- 2.1 Directive 2017/164/EU (the 4th IOELV Directive) further amends the list of Community indicative occupational exposure limit values, with changes introduced for 31 substances. Annex 1 to this notice lists the changes, which are binding on UK ships. In line with the requirements of Directive 98/24/EC (as amended), the United Kingdom is required to establish national indicative occupational exposure limit values for the chemical agents listed in the Annex to Directive 2017/164/EU.

2.2 Under the Chemical Agents Regulations 2010

“binding occupational exposure limit value” in relation to a chemical agent means any binding occupational exposure limit value established for that agent in Annex I to the Directive;

“national occupational exposure limit value” in relation to a chemical agent means —

- (a) any indicative occupational exposure limit value established for that agent in the Annex to Commission Directive 91/322/EEC on establishing indicative limit values by implementing Council Directive 80/1107/EEC on the protection of workers from the risks related to exposure to chemical, physical and biological agents at work as amended from time to time; or
- (b) any indicative occupational exposure limit value established for that agent in the Annex to Commission Directive 2000/39/EC establishing a first list of indicative limit values in implementation of Council Directive 98/24/EC on the protection of the health and safety of workers from the risks related to chemical agents at work, as amended from time to time;
- (c) any indicative occupational exposure limit value established for that agent in the Annex to Commission Directive 2006/15/EC establishing a second list of indicative occupational exposure limit values in implementation of Council Directive 98/24/EC and amending Directives 1/322/EEC and 2000/39/EC, as amended from time to time;
- (d) any indicative occupational exposure limit value established for that agent in the Annex to Commission Directive 2009/161/EU establishing a third list of indicative occupational exposure limit values in implementation of Council Directive 98/24/EC and amending Commission Directive 2000/39/EC, as amended from time to time; or
- (e) where more stringent, any workplace exposure limit established for that agent in document EH40

- 2.3 In establishing national indicative occupational exposure limit values for the agents concerned, the United Kingdom has utilised the Community indicative occupational exposure limit values for those agents except where a more stringent workplace exposure limit has been established by the Health and Safety Executive and included in document EH40/2005 published by them and available on the HSE website – <http://www.hse.gov.uk/pubns/books/eh40.htm>



- 2.4 EH40 now takes into account the 4th list of IOELVs from Directive 2017/164/EU, and those limits apply to all activities of workers on UK registered ships and Government ships (other than Royal Navy vessels).

3 Expected impact on ships

- 3.1 The majority of the 31 chemical agents for which limits have been introduced or lowered are unlikely to be in use / encountered on ships other than as cargoes where protective measures are already in place.
- 3.2 However, six of the substances may be of interest. The following information is drawn from HSE's consultation document <http://www.hse.gov.uk/consult/condocs/cd283.htm>
- 3.3 **2-ethylhexan-1-ol** is a dark brown liquid with an aromatic odour. It is used in lubricants and greases, coating products, hydraulic fluids, fillers and putties, plasters, modelling clay, fuels, anti-freeze products and washing and cleaning products. It is manufactured and/or imported in the EU in quantities of 100,000 to 1,000,000 tonnes per year.
- 3.4 There have previously been no workplace exposure limits ("WELs") for this substance. The new 8-hour time-weighted average ("TWA") will be 5.4mg/m³
- 3.5 **Carbon Monoxide** is a colourless, odourless and tasteless gas. It is produced as a by-product, not manufactured or used. In occupational settings it is found primarily in mines and also in foundries. On ships it is a product of petrol and diesel engines and generators, so may be found on vehicle decks on ro-ro ferries. However, with the statutory requirements for ventilation of vehicle decks and the relatively short periods of exposure these limits are not expected to be exceeded in normal circumstances.
- 3.6 The previous TWA 8-hour is 35mg.m³, and short term exposure limit ("STEL") is 232 mg.m³. The new level will be 23mg.m³ 8-hours TWA and STEL of 117mg.m³
- 3.7 **Manganese and inorganic manganese compounds (as manganese)** is a hard brittle metallic element, brilliant white in colour with a reddish tinge. It is used in the production of ferrous and non-ferrous metal alloys, including those essential to steel making. The most likely exposure on ships is from welding.
- 3.8 For this substance, the previous WEL 8-hour TWA has been reduced from 0.5mg.m³ inhalable fraction to 0.2mg.m³ inhalable fraction 0.05 respirable fraction. (There is no STEL) HSE's informal consultation with the welding industry indicated that exposure to manganese only arises because it is a constituent of welding fume. Exposure to welding fumes should already be controlled under existing health and safety measures, but additional monitoring and sampling to check for compliance with the WEL may be needed where welding work continues for long periods.
- 3.9 **Nitrogen dioxide (NO₂)** is found in ambient air as a product of natural as well as human activities. Production of NO₂ as the final product is limited. On ships it may occur as a by-product of welding, or in exhaust from combustion engines in enclosed spaces.
- 3.10 A new WEL has been introduced of 8-hour TWA of 0,96mg.m³ and an STEL of 1.91mg.m³. In respect of welding, current requirements for other substances should already lead to exposures to NO₂ that are below the new WEL. On vehicle decks the statutory requirements for ventilation and the relatively short periods of exposure, these limits are not expected to be exceeded in normal circumstances.
- 3.11 **Nitrogen monoxide (sometimes known as nitric oxide)** is a colourless gas with a sharp, sweet odour. It is manufactured for use in the synthesis of nitrate fertilisers and



used in nitration reactions and as a respiratory stimulant in hospital intensive care therapy. Occupational exposure can arise during its production and subsequent use, or where it is produced adventitiously as a product of incomplete combustion in fossil fuels, for example in motor vehicles (diesel and petrol fuels), and therefore will occur on ro-ro vehicle decks.

- 3.12 Exposure also occurs during welding and cutting processes, following explosions, during the use of heating appliances and during the heating of cooking oils, food etc.
- 3.13 A new WEL has been introduced at 8-hour TWA of 2.5mg.m³.
- 3.14 In respect of welding, current requirements for other substances should already lead to exposures to NO₂ that are below the new WEL. On vehicle decks the statutory requirements for ventilation and the relatively short periods of exposure, these limits are not expected to be exceeded in normal circumstances.
- 3.15 **Sulphur dioxide** is a gas with a pungent smell. It is used in pH regulators and water treatment products, paper chemicals and dyes, water treatment chemicals, metal surface treatment products, non-metal surface treatment products and pharmaceuticals. Sulphur dioxide is used in the formulation of mixtures and/or re-packaging. It is also used for the manufacture of chemicals, metals, food products, mineral products (e.g. plasters, cement), pulp, paper and paper products and fabricated metal products. It is manufactured and/or imported in the EU in quantities of 100,000 – 1,000,000 tonnes per year.
- 3.16 A new WEL has been introduced at 8-hour TWA of 1.3mg.m³ and STEL of 2.7mg.m³.

More Information

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LIST OF REVISED LIMIT VALUES FROM DIRECTIVE 2017/164/EU

EC No (1)	CAS No (2)	NAME OF THE CHEMICAL AGENT	LIMIT VALUES				Notation (3)
			8 hours (4)		Short-term (5)		
			mg/m3 (6)	ppm (7)	mg/m3 (6)	ppm (7)	
—	—	Manganese and inorganic manganese compounds (as manganese)	0,2 (8) 0,05 (9)	—	—	—	—
200-240-8	55-63-0	Glycerol trinitrate	0,095	0,01	0,19	0,02	skin
200-262-8	56-23-5	Carbon tetrachloride; Tetrachloromethane	6,4	1	32	5	skin
200-521-5	61-82-5	Amitrole	0,2	—	—	—	—
200-580-7	64-19-7	Acetic acid	25	10	50	20	—
200-821-6	74-90-8	Hydrogen cyanide (as cyanide)	1	0,9	5	4,5	skin
200-838-9	75-09-2	Methylene chloride; Dichloromethane	353	100	706	200	skin
200-864-0	75-35-4	Vinylidene chloride; 1,1-Dichloroethylene	8	2	20	5	—
201-083-8	78-10-4	Tetraethyl orthosilicate	44	5	—	—	—
201-177-9	79-10-7	Acrylic acid; Prop-2-enoic acid	29	10	59 (10)	20 (10)	—
201-188-9	79-24-3	Nitroethane	62	20	312	100	skin
201-245-8	80-05-7	Bisphenol A; 4,4'-Isopropylidenediphenol	2 (8)	—	—	—	—
202-981-2	101-84-8	Diphenyl ether	7	1	14	2	—
203-234-3	104-76-7	2-ethylhexan-1-ol	5,4	1	—	—	—
203-400-5	106-46-7	1,4-Dichlorobenzene; p-Dichlorobenzene	12	2	60	10	skin
203-453-4	107-02-8	Acrolein; Acrylaldehyde; Prop-2-enal	0,05	0,02	0,12	0,05	—
203-481-7	107-31-3	Methyl formate	125	50	250	100	skin
203-788-6	110-65-6	But-2-yne-1,4-diol	0,5	—	—	—	—
204-825-9	127-18-4	Tetrachloroethylene	138	20	275	40	skin
205-500-4	141-78-6	Ethyl acetate	734	200	1 468	400	—
205-599-4	143-33-9	Sodium cyanide	1	—	5	—	skin



		(as cyanide)					
205-792-3	151-50-8	Potassium cyanide (as cyanide)	1	—	5	—	skin
207-069-8	431-03-8	Diacetyl; Butanedione	0,07	0,02	0,36	0,1	—
211-128-3	630-08-0	Carbon monoxide	23	20	117	100	—
215-137-3	1305-62-0	Calcium dihydroxide	1 (9)	—	4 (9)	—	—
215-138-9	1305-78-8	Calcium oxide	1 (9)	—	4 (9)	—	—
231-195-2	7446-09-5	Sulphur dioxide	1,3	0,5	2,7	1	—
231-484-3	7580-67-8	Lithium hydride	—	—	0,02 (8)	—	—
233-271-0	10102-43-9	Nitrogen monoxide	2,5	2	—	—	—
233-272-6	10102-44-0	Nitrogen dioxide	0,96	0,5	1,91	1	—
262-967-7	61788-32-7	Terphenyl, hydrogenated	19	2	48	5	—

Notes

[\(1\)](#) EC No: European Community (EC) number, the numerical identifier for substances within the European Union.

[\(2\)](#) CAS No: Chemical Abstract Service Registry Number.

[\(3\)](#) A skin notation assigned to the occupational exposure limit value indicates the possibility of significant uptake through the skin.

[\(4\)](#) Measured or calculated in relation to a reference period of 8 hours time-weighted average (TWA).

[\(5\)](#) Short-term exposure limit (STEL). A limit value above which exposure should not occur and which is related to a 15-minute period unless otherwise specified.

[\(6\)](#) mg/m³ : milligrams per cubic metre of air. For chemicals in gas or vapour phase the limit value is expressed at 20 °C and 101,3 kPa.

[\(7\)](#) ppm: parts per million by volume in air (ml/m³).

[\(8\)](#) Inhalable fraction.

[\(9\)](#) Respirable fraction.

[\(10\)](#) Short-term exposure limit value in relation to a reference period of 1 minute.

