

10. Hazardous waste

- Of hazardous waste managed, 48% is exported for treatment, 22% is treated at the site of generation (IPPC licensed facilities) and 30% is sent to commercial hazardous waste treatment facilities within the State.

10.1 Introduction

Waste is classified as being hazardous when it displays properties (i.e. oxidising, explosive, flammable, irritant, toxic etc.) that make it dangerous or potentially harmful to human health or the environment. A full list of these properties is listed in Annex III of the Waste Directive 2008/98/EC, as transposed into national legislation by the European Communities (Waste Directive) Regulation, 2011 (S.I. No. 126 of 2011).

Industry is the largest generator of hazardous waste in Ireland, giving rise to industrial solvents, sludges, oils and chemicals. Households, small businesses, farms, the healthcare and construction sectors also generate substantial quantities of hazardous waste such as lead-acid batteries, certain waste electrical and electronic equipment, healthcare risk waste, solvent-based paints and varnishes, and waste oils.

Information on the management of hazardous waste in 2012 was compiled from three sources, based on the location of treatment:

- Data on hazardous waste treatment on-site at the industry where it was generated (which occurs under EPA licence at companies mainly in the pharmachem sector) were obtained from licensee's Pollutant Release and Transfer Returns (PRTR) and Annual Environmental Reports (AER).
- Data on hazardous waste treatment at commercial facilities in Ireland were obtained by way of a survey, which was sent to facilities that are licensed by the EPA or permitted by the local authority to treat hazardous wastes.
- Data on the import and export of notifiable waste⁸¹ were provided by the National Transfrontier Shipment Office (NTFSO) at Dublin City Council. Not all notifiable wastes are purely hazardous EWC codes. The EPA excluded exclusively non-hazardous notifiable wastes from the calculations in this chapter, but as many shipments are a mix of hazardous and non-hazardous wastes there may be some non-hazardous wastes reported within the notifiable exports tonnage.
- The amounts of hazardous waste managed in 2012, as compiled from the information sources described above, are presented in Table 22. Of the three categories, 22% was treated on-site at industry where it was generated, 30% was sent off-site to a commercial hazardous waste facility for treatment and 48% was exported for treatment. Export is therefore an important route for treatment of hazardous waste generated in the State.

Table 22: Summary of hazardous waste management, 2009-2012 (excluding contaminated soil)

Category	2009	2010	2011	2012
Hazardous waste exported (t)	150,395	143,180	149,037	139,872
On-site at industry (t)	74,668	76,655	67,785	68,100
Off-site in Ireland (t)	89,992	93,048	98,844	88,866 ⁸²

(Source: PRTR and AER returns; hazardous waste treatment survey; NTFSO, recovery organisations survey for WEEE)

⁸¹ Notifiable wastes are listed in annexes to the Shipment of Waste Regulation.

⁸² Note that some hazardous waste treated in the State is exported for further treatment.

10.2 Hazardous waste treatment in Ireland

Ireland has a number of licensed and permitted facilities authorised to treat hazardous waste, but currently has no dedicated hazardous waste landfill disposal facility. East Galway Residual Landfill (W0178-02) is licensed to accept certain types of asbestos waste for disposal but has not accepted any such waste to date and the facility is currently closed. Authorised hazardous waste treatment in Ireland either happens on-site at the industrial facility where the waste was generated (under conditions of EPA licence), or off-site at commercial hazardous waste treatment facilities. The sections below describe these in more detail.

10.2.1 On-site at industry:

'On-site at industry' refers to hazardous waste treated on-site at the IPPC licensed facility where it was generated. Of the tonnage of hazardous waste treated at IPPC licensed facilities in 2012, 48% underwent a disposal operation and 52% a recovery operation.

Hazardous waste treatment at the site of generation occurred mainly within the chemicals sector, but also in the minerals, fossil fuels and surface coatings sectors. Twenty IPPC licensees reported treating hazardous waste on-site in 2012. The main activities in relation to quantity treated in 2012 were solvent recovery (R2), landfill (D1), incineration without energy recovery (D10), and use of solvents or other waste as a fuel (R1). See Table 23 and Appendix N for more information.

Table 23: Methods of treatment of hazardous waste on-site at IPPC licensed facilities in 2012

Treatment code	Treatment activity description	Tonnage	Details ⁸³
R1	Use as a fuel or other means to generate energy	13,111	Mainly solvents and some other industrial hazardous waste recovered at various chemical industries
R2	Solvent reclamation/regeneration	21,825	Solvents recovered at various chemical industries
R3	Recycling/reclamation of organic substances which are not used as solvents	287	Solid wastes from Manufacture, Formulation, Supply and Use (MFSU) of pharmaceuticals recovered
R9	Used oil refining or other reuses of previously used oil	180	Waste oil recovered at Phillips 66 Bantry Bay Terminal Limited
	Sub-total recovery operations	35,403	
D1	Deposit into or onto land	15,853	Disposal of salts and salt cake (Aughinish Alumina Limited) and oily sludges (Galmoy Mines Limited)
D8	Biological treatment	1,576	Disposal of solvents at various chemical industries
D9	Physico-chemical treatment	140	Disposal of solvents at chemical industry
D10	Incineration on land	15,129	Various hazardous wastes (mainly solvents, but also sludges and filter cakes, contaminated packaging) incinerated at various chemical industries
	Sub-total disposal operations	32,698	
	Total hazardous waste treated on-site at IPPC licensed facilities (t)	68,100	

(Source: IPPC PRTR and AER returns)

⁸³ For more detailed information on the tonnages and waste types reported as treated at each IPPC licensed facility, please see Appendix N.

There was no significant difference between the reported total tonnage of hazardous waste treated on-site at industry between 2011 and 2012 (328 tonnes), although within some hazardous waste categories there were shifts. This includes an increase in solvents recovered on-site at IPPC facilities, rather than transferred to commercial waste treatment facilities for treatment, and a reduction in saltcake produced by Aughinish Alumina Limited primarily due to the improved quality of raw bauxite.

Table 24 below sets out the quantities of hazardous waste treated on-site at IPPC licensed facilities in 2011 and 2012 by waste category. The main categories of waste treated on-site at IPPC licensed facilities in 2012 were solvents (58%) and salts & saltcake (23%).

Table 24: Tonnage of hazardous waste treated on-site at industry in 2012 by waste category (excluding contaminated soil)

Category	Treated on-site at industry in 2011 (t)	Treated on-site at industry in 2012(t)
Solvents	34,354	39,297
Solvents (halogenated, where specified)	6,176	5,602
Oil waste (mineral oil)	180	180
Industrial hazardous waste (other)	4,722	5,107
Salts and saltcake	20,079	15,808
Oily sludges	45	45
Aqueous washing liquids and mother liquors (07 __ 01*)	1,852	1,700
Solid wastes from MFSU of pharmaceuticals (07 05 13*)	295	291
Sludges and filter cakes	0	0.2
Packaging (contaminated or containing residues)	25	26
Absorbents, wiping cloths etc. (EWC 15 02 02*)	30	31
Laboratory and general chemical waste	13	13
Totals	67,771	68,100

(Source: IPPC PRTR and AER returns)

10.2.2 Off-site in Ireland

'Off-site in Ireland' refers to waste sent to EPA licensed and local authority permitted commercial hazardous waste treatment facilities in Ireland for treatment. There was a 11% decrease in the levels of hazardous waste treated at such facilities in 2012 and this is primarily due to an increase in the recovery of aqueous washing liquids and solvents on-site at industry.

Table 25 provides information on the licensed and permitted commercial hazardous waste treatment facilities that were surveyed for 2012 data, the categories of waste treated and the treatment type.

Table 25: Hazardous waste treatment facilities surveyed for National Waste Report 2012⁸⁴

Facility Name	Licence/Permit No.	Details
Eco-Safe Systems Ltd	W0054-02	D9 – physico-chemical treatment (sterilisation of clinical/veterinary waste)
Enva t/a MacAnulty (Dublin)	W0196-01	D9 – physico-chemical treatment (various oil and aqueous hazardous waste streams)
Enva Portlaoise	W0184-01	R5 – bioremediation of wastes containing heavy metals & bioremediation and trommelling of soils & stones. R9 – used oil refining
Enva Ireland Ltd. t/a Shannon Environmental Services	W0041-01	D9 – physico-chemical treatment (neutralisation of various hazardous wastes and precipitation of reactions, which produce a non-hazardous sludge)
Indaver Dublin Port	W0036-02	R2 - Solvent reclamation/regeneration (blending)
Irish Lamp Recycling Co. Ltd	KE-08-0348-01	R3/R4/R5 – dismantling of WEEE into constituents
KMK Metals Recycling Limited	W0113-04	R4-R7,R8,R11-R13 – dismantling of WEEE into constituents
Rilta Environmental Ltd	W0192-03	D9 – physico-chemical treatment R9 – used oil refining R3/R4 - drum reconditioning
Rilta Environmental Ltd	W0185-01	R4 – treatment of transformers
Soltec (Irl) Ltd	W0115-01	R2 – solvent reclamation/regeneration (used in the production of thinners)
SRCL Sterile Technologies Ireland Ltd	W0055-02	R3 - Recycling/reclamation of organic substances which are not used as solvents (healthcare risk waste is shredded and disinfected using steam).
The Recycling Village Limited	MH-11-0005-01	R3/R4/R5 – dismantling of WEEE into constituents
Veolia Fermoy	W0050-02	R2 – Solvent reclamation/regeneration (fuel blending) R4 – treatment of contaminated metal packaging to render non-hazardous

Table 26 identifies the reported recovery and disposal classes for hazardous waste managed off-site in Ireland (69% recovery and 31% disposal operations).

⁸⁴ Enva Ireland Ltd (W0145-02) and Safety Kleen Ireland Ltd (W0099-01) were also surveyed but reported no treatment of hazardous waste on-site in 2012.

Table 26: Methods of treatment of hazardous waste off-site in Ireland in 2012 (excluding contaminated soil)

Recovery or disposal code ⁸⁵	Disposal or recovery activity	Treated off-site in Ireland (t)
D9	Physico-chemical treatment	27,952
	Sub-total disposal:	27,952
R2	Solvent recovery	16,140
R3	Organic substance recovery	8,317
R3/R4	Combination of metal recovery and inorganic substance recovery	1,713
R4	Metal recycling	1,253
R4/R5	Combination of metal recovery and inorganic substance recovery	333
R3/R4/R5	Combination of metal recovery, inorganic substance recovery and organic substance recovery	7,581
R5	Inorganic substance recovery	165
R9	Oil recovery	25,412
	Sub-total recovery:	60,914
	Total (t):	88,866

(Source: hazardous waste treatment survey, recovery organisations survey for WEEE)

The waste categories primarily treated off-site in Ireland in 2012 were oil wastes (42%), solvents (11%), healthcare risk waste (10%) and WEEE (10%).

64 |

Table 27: Tonnage of hazardous waste treated off-site in Ireland in 2012 by waste category (excluding contaminated soil)

Category	2011	2012
Oil waste (mineral oil)	38,092	37,778
Solvents	16,898	9,954
Healthcare risk waste	9,036	8,852
Equipment (electrical, electronic, mechanical)	7,404	8,834
Aqueous washing liquids and mother liquors (07 __ 01*)	11,937	5,036
Oily sludges	3,464	4,497
Industrial hazardous waste (other)	3,046	4,119
Acid and alkali waste	3,777	2,624
Packaging (contaminated or containing residues)	2,068	1,809

85 See Appendix G for a descriptive list of recovery and disposal operations.

Category	2011	2012
Solvents (halogenated, where specified)	631	1,455
Paint, ink and varnish waste (including packaging)	1,358	1,452
Municipal hazardous waste (other)	4	710
Fluorescent lamps	260	333
Sludges and filter cakes	132	474
Laboratory and general chemical waste	59	406
Metal- and heavy metal-containing waste	8	190
Photographic chemical waste	95	145
Chemical waste (other)	120	106
Oil filters	7	78
Salts and saltcake	4	12
Absorbents, wiping cloths etc. (EWC 15 02 02*)	2	2
Thermal treatment and combustion residues	438	0
Totals	98,840	88,866

(Source: IPPC PRTR and AER returns; hazardous waste treatment survey; recovery organisations survey for WEEE)

10.2.3 Summary on hazardous waste treated in the State

The overall amount of hazardous waste treated both on-site at industry and off-site in Ireland has decreased from 166,608 tonnes in 2011 to 157,234 tonnes in 2012, a reduction of 6%. The reduction in the amount of saltcake and aqueous washing liquids and mother liquors (07 __ 01*) treated are the major contributors to this reduction. There was a 41% decrease in the amount of solvents treated at hazardous waste facilities in Ireland; an increase in treatment of solvents on-site at IPPC facilities has contributed to this reduction.

10.3 Export of notifiable waste

There was a 3% decrease in the quantity of hazardous waste exported for treatment in 2012 compared to 2011. The downward trend in the quantity of hazardous construction and demolition waste exported since 2009 is predominantly due to a reduction in the amount of railway sleepers exported (11,930 tonnes exported in 2009, 7,856 tonnes in 2010, 2,779 tonnes in 2011 and none in 2012).

While the overall quantity of hazardous waste exported for treatment in 2012 has decreased, there was an increase in the tonnage of certain hazardous waste streams exported. There was a large increase in thermal treatment and combustion residues, as a direct result of the waste generated by Ireland's first municipal waste incinerator which completed its first full year in operation in 2012. There was also a large increase in the tonnage of chemical waste exported due to an increase in hazardous liquid waste generation during the manufacture of pharmaceuticals.

Solvents account for 32% of exports, followed by chemical waste (12%), lead acid batteries (10%), WEEE (8%), thermal treatment and combustion residues (7%), other industrial hazardous waste (7%) and aqueous washing liquids and mother liquors (5%). These waste categories account for 88% of total waste exported by weight (see Table 28 for more information).

Table 28: Categories of reported exports of hazardous waste, 2009 - 2012

Category	Exported (t)	Exported (t)	Exported (t)	Exported (t)
	2009	2010	2011	2012
Solvents	52,370	48,682	52,243	46,680
Solvents (halogenated, where specified)	4,540	1,893	6,079	3,528
Oil waste (mineral oil)	2,443	2,363	633	637
Industrial hazardous waste (other)	11,927	5,124	7,027	9,393
Healthcare risk waste	734	712	692	687
Oily sludges	94	45	30	433
Lead-acid batteries	11,832	14,805	15,374	14,281
Equipment (electrical, electronic, mechanical)	8,410	11,897	17,493	15,680
Chemical waste (other)	3,701	7,780	9,305	12,141
Paint, ink and varnish waste (including packaging)	4,834	5,459	4,713	4,165
Acid and alkali waste	2,578	1,556	1,558	1,394
Asbestos waste	14,068	9,512	7,001	4,255
Aqueous washing liquids and mother liquors (07 __ 01*)	10,647	12,637	9,616	6,684
Solid wastes from MFSU of pharmaceuticals (07 05 13*)	1,956	3,982	4,881	4,469
Sludges and filter cakes	3,834	3,663	3,006	1,676
Batteries (small, non-lead acid)	223	136	46	92
Packaging (contaminated or containing residues)	664	867	777	819
Photographic chemical waste	432	221	284	181
Oil filters	741	739	654	720
Construction and demolition waste (hazardous)	12,892	9,137	3,236	252
Metal- and heavy metal-containing waste	69	181	83	237
Agricultural hazardous waste	72			0
Absorbents, wiping cloths etc. (EWC 15 02 02*)	661	596	939	1,315
Fluorescent lamps	74	58	119	20
Pesticides, herbicides	56	30	47	0
Laboratory and general chemical waste	485	548	677	527

Category	Exported (t)	Exported (t)	Exported (t)	Exported (t)
	2009	2010	2011	2012
Salts and saltcake		2	1	2
Thermal treatment and combustion residues	59	89	1,977	9,459
Medicines				60
Municipal hazardous waste (other)		437	537	0
Polychlorinated biphenyls	1	29	8	85
Total	150,397	143,179	149,037	139,872

(Source: NTFSO)

Table 29 below shows the types of disposal and recovery treatments of hazardous waste exported, of which 34% by weight was disposed and 66% recovered. Of the tonnage exported for disposal, the vast bulk (81%) is sent for incineration without energy recovery (D10). Of the tonnage exported for recovery, 29% went for metal recovery (R4) and 21% for use as a fuel (R1).

Table 29 Disposal and recovery of reported export of hazardous waste, 2012

Disposal (D)	Exported (t)
D10	39,612
D9	2,930
D1	2,389
D5	1,666
D1/D5	973
D8	487
D8/D9	238
D14	29
Sub-total hazardous waste exported for disposal	48,324
Recovery (R)	Exported (t)
R4	26,542
R1	20,464
R2	13,879

Recovery (R)	Exported (t)
R5	10,937
R2, R3	6,256
R12	4,705
R3, R4	3,740
R4, R5	267
R13	1,458
R1, R3, R4	980
R9	730
R6	677
R3	164
R1, R4	327
R1, R3, R5	185
R1, R4, R5	144
R3, R5	55
R1, R9	22
R1, R2	13
R8	3
Sub-total hazardous waste exported for recovery	91,549
Total hazardous waste exported for treatment	139,872

(Source: NTFSO)

Figure 20 and Table 30 provide information on the destination and fate of hazardous waste exported from Ireland in 2012 for treatment at authorised facilities abroad. The UK continues to be the primary destination for hazardous waste exported (40%), followed by Belgium (27%) and Germany (22%).

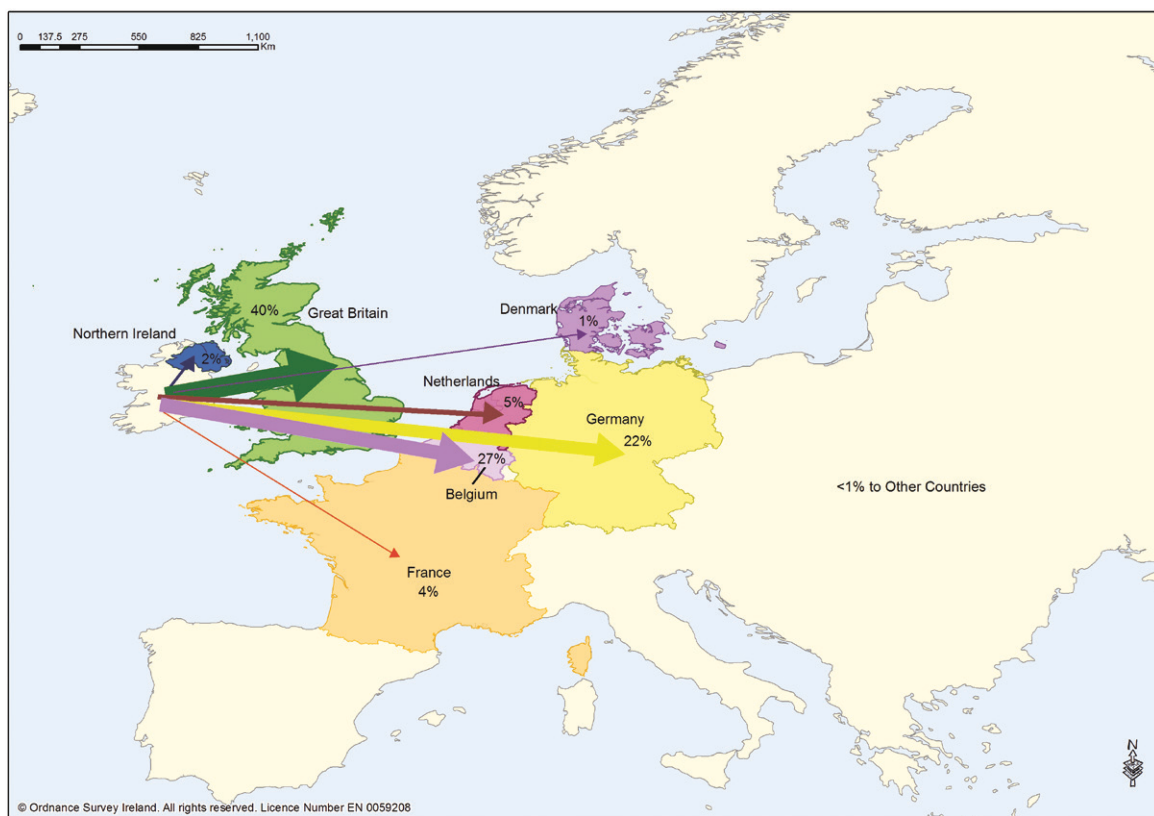


Figure 20: Destination of exported hazardous waste in 2012 (excluding contaminated soil)

Table 30: Destination and fate of notified hazardous waste exports (excluding contaminated soil), 2012

Destination	Disposal (t)	Recovery (t)	Total (t)
UK	8,720	47,665	56,385
Belgium	19,061	19,156	38,217
Germany	16,796	14,125	30,920
Netherlands	510	6,377	6,888
France	1,413	3,753	5,167
Denmark	1,610	-	1,610
Sweden	10	195	206
Poland	-	206	205
Finland	202	-	202
USA	-	69	69
Italy	-	3	3
Overall totals	48,322	91,549	139,872

(Source: NTFSO)

10.4 Notifiable waste imported for treatment

In 2012, 6,625 tonnes of oil-related waste was imported from the UK for recovery (R9) at commercial hazardous waste treatment facilities in the State.

10.5 Contaminated soil

Table 31 reports on the off-site management of contaminated soil between 2009 and 2012 (data do not reflect any contaminated soil that was treated *in situ* at its point of generation). There was a 40% reduction in the treatment of contaminated soil off-site in Ireland in 2012 compared to 2011. ESB Power Generation exported 5,056 tonnes of contaminated soil in 2011 which contributed to the high tonnage in that year.

Enva Ireland Limited's Portlaoise facility (W0184-01) is the only facility in Ireland licensed to treat contaminated soil (licensed to accept 40,000 tonnes per annum), and 54% of the total reported contaminated soil was treated at this facility. Of the total managed, 46% was exported to Germany and the Netherlands. There has been a significant drop in the tonnage of contaminated soil reported as managed off-site in recent years, which is a direct result of the downturn in the construction industry.

Table 31: Reported off-site management of contaminated soil, 2009 - 2012

	2009	2010	2011	2012
Off-site in Ireland (t)	12,428 (R ⁸⁶)	6,260 (R)	7,094 (R)	4,246 (R)
Exported (total) (t)	476	2,590	10,203	3,638
<i>Germany</i>	7 (D ⁸⁷)	2,590 (D)	10,203 (D)	3,610 (D)
				11 (R)
<i>Netherlands</i>	469 (R)			17 (R)
Total managed off-site (t)	12,904	8,850	17,297	7,884

(Source: Hazardous waste treatment survey, NTFSO)

10.6 National Hazardous Waste Management Plan

The Environmental Protection Agency has recently published a revised National Hazardous Waste Management Plan for the period 2014-2020. See Section 2.2.2 of Chapter 2 for more information.

86 R=recovery operation.

87 D=disposal operation.