



**Draft National Hazardous Waste  
Management Plan  
2021 – 2027  
For Public Consultation**

**ENVIRONMENTAL PROTECTION AGENCY**

An Ghníomhaireacht um Chaomhnú Comhshaoil

PO Box 3000, Johnstown Castle, Co. Wexford, Ireland

Telephone: +353 53 9160600 Fax: +353 53 9160699

Email: [info@epa.ie](mailto:info@epa.ie) Website: [www.epa.ie](http://www.epa.ie)

Lo Call 1890 33 55 99

© Environmental Protection Agency 2021



This document does not purport to be and should not be considered a legal interpretation of the legislation referred to herein.

Although every effort has been made to ensure the accuracy of the material contained in this publication, complete accuracy cannot be guaranteed. Neither the Environmental Protection Agency nor the author accepts any responsibility whatsoever for loss or damage occasioned, or claimed to have been occasioned, in part or in full as a consequence of any person acting or refraining from acting, as a result of a matter contained in this publication. All or part of this publication may be reproduced without further permission, provided the source is acknowledged.

<b>Executive Summary</b>		
<b>1.</b>	<b>Introduction</b>	<b>1</b>
<b>2.</b>	<b>Objectives &amp; Recommendations</b>	<b>4</b>
<b>3.</b>	<b>Hazardous Waste Profile</b>	<b>12</b>
<b>4.</b>	<b>Prevention</b>	<b>21</b>
<b>5.</b>	<b>Collection</b>	<b>28</b>
<b>6.</b>	<b>Treatment</b>	<b>38</b>
<b>7.</b>	<b>Policy &amp; Regulation</b>	<b>43</b>
	<b>Appendices</b>	<b>55</b>

## Executive Summary

Substances with hazardous properties are widely used throughout our economy and society from highly regulated industrial settings through to the household. These can pose significant risks to human health and the environment, if inappropriately used and managed. In tandem with control on the movement of these substances through production and use phases, there is a need for careful management of any wastes with hazardous properties generated.

The Environmental Protection Agency has prepared this National Hazardous Waste Management Plan (NWHMP) for the Republic of Ireland covering a six-year period from 2021 to 2027. This is the fourth National Hazardous Waste Management Plan and is made under Section 26 of the Waste Management Act 1996. It sets out the priorities to be pursued over the next six years and beyond to improve the prevention and management of hazardous waste, taking into account the progress made since the previous revised plan, and the waste policy and legislative changes that have occurred since the previous revised plan was published. The purpose of this plan is to protect the environment and human health in Ireland through best-practice management of hazardous wastes through the following objectives:

1. Support and drive priority **prevention** actions by industry and the public to reduce the generation of hazardous waste;
2. Support the identification of adequate and appropriate **collection** infrastructure for all hazardous wastes with a view to mitigating environmental and health impacts;
3. Endorse the **proximity** principle such that hazardous wastes are treated as close to the point of production as possible – including within Ireland, where feasible;
4. Support effective **regulation** of the movement and disposal of hazardous wastes in line with national policy priorities;
5. Promotion of safe reuse and recycling pathways in support of the **circular economy**.

### *Hazardous waste generation and management*

There has been a steady increase in hazardous waste generated in Ireland since 2013. This is primarily as a result of increased economic activity. The estimate of hazardous waste generated in Ireland in 2019 is 580,977 tonnes. There was an increase of over 54,000 tonnes in 2019 when compared with 2018<sup>1</sup>.

Most of Ireland's hazardous waste is exported for treatment, in recent years primarily to the Netherlands, United Kingdom and Norway. A total of 379,386 tonnes is exported for treatment, of which 27% goes for disposal and 73% is recovered. A total of 201,591 tonnes is treated to non-hazardous status in Ireland, of which 62% is disposed of and 38% is recovered.

---

<sup>1</sup> At the end of 2019, incinerator bottom ash from Dublin Waste to Energy was reclassified as non-hazardous waste. Amounting to 100,000t of waste in 2019, this change will be reflected in 2020 data.

### *Policy Developments*

The Circular Economy concept is the overarching framework for driving resource and material sustainability at EU and national level. A circular economy is built on optimising material cycles, specifically: a) how we use, re-use and dispose of materials; and b) how we minimise waste to make the most of resources in that process. Risks to humans or the environment should be avoided along the entire life cycle of a product, so the use of hazardous chemicals in products should be reduced and residual hazardous wastes must be identified and appropriately managed.

The *European Green Deal* is an EU-wide plan to make the EU's economy sustainable by moving to a clean, circular economy that will boost the efficient use of resources and cut pollution. The plan proposes that chemicals are used more safely and sustainably in industrial settings including consideration and management of hazardous wastes arising from manufacture and use of products. In Ireland, the *Waste Action Plan for a Circular Economy* recognises the importance of appropriate management of hazardous wastes and notes the position of the NHWMP within the hierarchy of statutory plans and programmes for the waste area.

### *Strategic Environmental Assessment and Appropriate Assessment*

Strategic Environmental Assessment (SEA) and an Appropriate Assessment (AA) have been carried out as part of the preparation of the fourth National Hazardous Waste Management Plan. The findings of these assessments informed the development of the Plan, along with feedback from the statutory consultation.

### *Plan Recommendations*

The NHWMP sets out a set of recommendations to be actioned within its lifetime to strengthen protection of the environment and human health through best-practice management of hazardous wastes. The recommendations are grouped into the following categories: *Policy & Regulation; Prevention; Collection & Treatment; and Implementation*. Each recommendation is accompanied by an 'owner' and specific actions to be implemented in the first half of the plan period. The planned mid-term review of the NHWMP will review progress these recommendations and revise them accordingly for the second half of the plan period.

# PART 1: PLAN MEASURES

## 1. Introduction

Hazardous waste is generated by all sectors of Irish society, from large industry, healthcare to small businesses, households and farms. It is for the most part managed by a professional hazardous waste industry and is treated appropriately and in accordance with legal requirements.

In 2019, the amount of hazardous waste generated in Ireland was estimated at 580,977 tonnes, which represents an increase over the previous year. Industry is the largest generator of hazardous waste (80%) in Ireland, generating hazardous waste such as industrial solvents, sludges, oils and chemicals. Other sectors such as construction, healthcare, agriculture and vehicle maintenance also produce hazardous wastes including lead-acid batteries, waste electrical and electronic equipment, healthcare risk waste, solvent-based paints and varnishes, and waste oils. Finally, households across Ireland generate quantities of several hazardous wastes including batteries, solvent-based paints, and cleaning & gardening chemicals.

A waste is classified as 'hazardous' when it can harm human health or the environment because it is explosive, oxidising, flammable, irritant, toxic, carcinogenic, corrosive, infectious, mutagenic, sensitising, or eco-toxic.

While hazardous substances may, by their very nature, present risks to human health and/or the environment, some substances are afforded particular attention due to the high, or in some cases unknown, levels of risks they pose.

Solutions to challenges posed by the legacy issues of hazardous substances in waste are complex. Promoting the Circular Economy ambition will require a combination of enforcement of relevant legislation and investment in innovation to provide, where technically and economically feasible, clean material cycles, so reducing the reintroduction of certain hazardous chemicals into production feedstocks. Some of these substances pose significant risks to human health and the environment, such as Brominated flame retardants (BFRs) – PBDE and HBCDD and Poly- and perfluoroalkylated substances. While production and use of many of these chemicals has been banned in the EU for some time, they are likely to be found in various waste streams into the foreseeable future.

Hazardous wastes are controlled by strict regulations to protect against the threat to people and the environment. The legislation principally originates in EU directives and regulations and is implemented in Ireland by the Waste Management Act 1996 as amended, related statutory instruments and other acts. Under the provisions of section 26 of the Waste Management Act, the EPA is required to develop a National Hazardous Waste Management Plan, and this plan represents the fourth cycle of hazardous waste planning in Ireland.

### 1.2 Environmental Assessment

Strategic Environmental Assessment (SEA) is a process for evaluating, at the earliest appropriate stage, the environmental consequences of implementing plan/ programme initiatives. The purpose

of these processes is to ensure that the environmental consequences of plans and programmes are assessed both during their preparation and prior to adoption. The SEA process also gives interested parties an opportunity to comment on the environmental impacts of the proposed plan or programme and to be kept informed during the decision-making process.

Appropriate Assessment is a process which assesses the potential adverse effects of a plan or project (in combination with other plans or projects) on Special Areas of Conservation (SACs) and Special Protection Areas (SPAs) which are European sites of conservation interest protected by national and European Law.

Following a screening process, it was determined that an SEA is required for the NHWMP. A scoping report was prepared based on assessment of an outline NHWMP and review of legal requirements. This was presented for consultation with the defined statutory bodies for SEA in Ireland and other stakeholders, including selected transboundary consultees. Input from this stage served to clarify the scope and level of detail to be considered in the environmental assessment. Informed by this scoping work; further discussion with EPA; and workshops on Alternatives and Monitoring, the Environmental Report was drafted. This document identified likely significant effects of the NHWMP and its reasonable alternatives; and informs the development of the NHWMP. In addition, a Natura Impact Statement was drafted which will inform an Appropriate Assessment and with a view to ensuring that the NHWMP does not result in any adverse effects on the integrity of any European site in view of its conservation objectives.

The requirement for SEA comes from the SEA Directive (2001/42/EC) and has been incorporated into Irish law through the European Communities (Environmental Assessment of Certain Plans and Programmes) Regulations 2004, S.I. No. 435/2004, as amended.

### 1.3 Progress on previous plan

The previous National Hazardous Waste Management Plan covered the period from 2014 to 2020, and set out 27 recommendations for the prevention, collection and treatment of hazardous waste. A report on the implementation of the plan was published in 2018.<sup>2</sup> and details of the progress against each of the recommendations are given in Appendix A. Overall, good progress was made on the previous plan, though further attention is required in a number of areas, including:

- (i) Developing a network of collection and transfer facilities to suit user needs to capture small-scale quantities of legacy wastes
- (ii) Providing increased hazardous waste collection facilities and appropriate awareness raising for households and small businesses
- (iii) Development of new producer responsibility obligations or initiatives for certain hazardous waste streams
- (iv) Increasing Ireland's level of capacity for self-sufficiency with regard to the treatment and management of hazardous waste

---

<sup>2</sup> <https://www.epa.ie/pubs/reports/waste/haz/progressreportnhwmp.html>

- (v) Greater development of waste stream and sector-specific indicators.

These issues have been considered as part of the preparation of this NHWMP and are reflected in the plan recommendations as set-out on the following section.

## 1.4 Preparation & Layout of 2021-2027 Plan

This plan has been prepared by the EPA and builds on the progress made in previous cycles of hazardous waste management planning in Ireland since 2001. The content was informed by waste data and statistics; review of current and emerging policy documents; and extensive stakeholder engagement. Over the course of preparing this document, discussions were conducted with many public sector and industry representatives and there was also a public consultation period.

The plan is laid out in two parts:

Part 1 outlines the context for the plan and presents its objectives & measures. This section also articulates the recommendations that are to be implemented through this plan.

Part 2 provides detail across core issues for hazardous waste management in Ireland, including waste statistics and the regulatory environment.



## 2. Objectives & Recommendations

This plan sets out priorities to be pursued to improve the management of hazardous waste in Ireland and in particular to prevent the disposal of this waste in a manner which would endanger human health or harm the environment. The key actors in the plan are the Government, its agencies and local authorities who have responsibilities with regard to waste and environmental policy. Through the implementation of its recommendations, the plan also seeks to influence private-sector priorities, practices and investment decisions with regard to hazardous waste management.

The waste hierarchy directs that hazardous waste should be managed in such a way that prioritises actions to reduce the quantity and the hazardous nature of waste at source. The hierarchy provides a framework for the articulation of this plan and its implementation.



### 2.1 Plan Objectives

Overall, the NHWMP articulates a strategic vision for best-practice in hazardous waste management in Ireland. The purpose of this plan is to protect the environment and human health in Ireland through best-practice management of hazardous wastes through the following objectives:

1. Drive priority **prevention** actions by industry and the public to reduce the generation of hazardous waste;
2. Support the identification of adequate and appropriate **collection** infrastructure for all hazardous wastes with a view to mitigating environmental and health impacts;
3. Endorse the **proximity** principle such that hazardous wastes are treated as close to the point of production as possible – including within Ireland, where feasible;
4. Support effective **regulation** of the movement and disposal of hazardous wastes in line with national policy priorities;
5. Promotion of safe reuse and recycling pathways in support of the **circular economy**.

### 2.2 Plan Recommendations

The volume of hazardous waste generated in Ireland continues to grow, decoupling the generation of hazardous waste from economic activity is a national challenge.

Policy change at a European level, such as the European Green Deal and the chemicals strategy for sustainability, has placed increased emphasis on reducing the hazardousness of products placed on the market. This is intended to strengthen current protections for human health & the environment; and to promote circularity by enabling safe reuse and recycling of products and materials. In order to stimulate and coordinate action across the priority topics within scope of the NHWMP, a set of

recommendations are presented in the plan. These are grouped into the following categories: *Policy & Regulation; Prevention; Collection & Treatment; and Implementation.*

**Policy & Regulation:** The policy context for hazardous waste management is rooted in environmental protection as set out in the EU Environmental Action Plans; in national waste management policy; and in the circular economy concept as articulated in the European Green Deal. Management of hazardous waste is controlled through a comprehensive suite of legislation which originates in EU directives and regulations and is implemented in Ireland by the Waste Management Act, related statutory instruments and other acts.

**Prevention:** All waste disposal options have some impact on the environment, and so prevention is positioned at the top of the waste hierarchy. In this area, waste prevention includes using smaller quantities of potentially harmful materials or using substances that are less toxic with a view to reducing the volumes of hazardous waste. The recommendations presented in this section focus on key sources of hazardous waste with targeted prevention actions.

**Collection & Treatment:** Major sources of hazardous waste in Ireland are generally well managed by the waste producers and waste management companies. This activity is overseen by a robust regulatory environment involving the EPA; local authorities and other public bodies. However, there is a significant number of non-regulated smaller sources of hazardous wastes such as small businesses, farms and households that require further attention in terms of collection infrastructure and regulation.

Much of Ireland's hazardous waste is exported for treatment. The relatively small-scale of waste generation in the country has mitigated against the establishment of treatment facilities for hazardous wastes; and export to existing facilities in Europe has provided a cost-effective disposal and recovery solution. However, widespread use of this approach does not align with the proximity principle and exposes Ireland to a risk from a deficiency in waste management capacity should export routes be closed.

**Implementation:** A number of working arrangements and supporting measures are set out in the recommendations to drive and coordinate responses to the priority issues noted in the plan and to allow for monitoring and reporting with regard to progress on these. Implementation of this plan will require appropriate financial and personnel resources to ensure that all recommendations in the NHWMP are acted upon by the nominated bodies within acceptable timescales.

Four issues are highlighted for completion during the lifetime of this plan, including a number of issues that have been identified and progressed in previous cycles but with final implementation outstanding. The 'challenge areas' are listed below:

1. Strengthen systemic resilience for management of hazardous waste.
2. By 2022, establish nationwide collection and transfer of farm hazardous wastes, including unused veterinary products.
3. By 2023, establish national collection of surplus / out-of-date medicines from household waste stream.
4. By 2023, establish collection platforms for surplus paint from household and commercial.

The following section sets out the set of recommendations to be actioned within the lifetime of the NHWMP to strengthen protection of the environment and human health through best-practice management of hazardous wastes. As noted above, the recommendations are grouped into the following categories: Policy & Regulation; Prevention; Collection & Treatment; and Implementation; and include the five challenge areas noted above. Each recommendation has an 'owner' indicated along with specific timely, focussed actions to be implemented in the first half of the plan period. The planned mid-term review of the NHWMP will review progress on these recommendations and revise them accordingly for the second half of the plan period.

## 2.4 Recommendations of National Hazardous Waste Management Plan (2021- 2027)

	Recommendation	Lead Org(s)	Key Actions	Timeframe	Reference Section
<b><u>POLICY &amp; REGULATION</u></b>		<u>Target objectives:</u> <i>Collection; Proximity; Regulation; Circular Economy.</i>			
1	<b>Ensure a coordinated national approach on hazardous waste in the context of the Circular Economy, with focus on prevention.</b>	DECC/EPA	<p>Incorporate prevention &amp; management of hazardous waste into the national Circular Economy Programme.</p> <p>Incorporation of relevant NHWMP objectives in national waste management planning.</p> <p>Support HSA-led implementation of the EU Chemicals Strategy for Sustainability Towards a Toxic-Free Environment as it relates to hazardous waste management.</p>	<p>By Q3-2021</p> <p>By Q4-2021</p> <p>Ongoing</p>	<a href="#">4.3</a> and <a href="#">7.1</a>
2	<b>Deliver strong and collaborative enforcement of hazardous waste legislation to ensure protection of human health and the environment.</b>	EPA/National Waste Enforcement Committee	<p>Agree and implement annual enforcement priorities for the storage, movement and treatment of hazardous waste.</p> <p>Initiate an annual regulatory forum on legislative and regulatory developments, sharing best practice and emerging hazardous waste issues.</p> <p>Determine annual market surveillance priorities to prevent unauthorised use of hazardous chemicals in mixtures and products.</p>	<p>Annual</p> <p>By Q4-2021</p> <p>Annual</p>	<a href="#">7.5</a>
3	<b>Provide for all-island approaches on hazardous waste issues.</b>	DECC	Establish a working group with Northern Ireland authorities to maximise opportunities for co-ordinated management and enforcement of hazardous waste activities.	By Q4-2021	<a href="#">3.4</a>
4	<b>Strengthen systemic resilience for management of hazardous waste.</b>	EPA	Commission a review of hazardous waste management during the COVID-19 pandemic.	By Q1-2022	<a href="#">3.7</a>

			Conduct a business continuity assessment for Ireland's hazardous waste management system to identify at-risk waste streams and associated infrastructure.	By Q3-2022	<a href="#">4.1</a>
<b>PREVENTION</b> Target objectives: <i>Prevention; Circular Economy.</i>					
5	Promote reduced consumption of hazardous substances in household settings.	RWMPOs	<p>Conduct awareness raising campaigns to highlight best-practices and alternatives, with initial focus on paints, cleaning products and gardening chemicals.</p> <p>Develop new coherent information on household hazardous waste and guidance on disposal of hazardous waste; and disseminate via targeted &amp; national campaigns; and through the EPA website &amp; <a href="#">www.mywaste.ie</a>.</p> <p>Conduct national survey on householder awareness &amp; behaviours regarding hazardous substances to inform prevention initiatives and measures.</p> <p>Examine potential of product &amp; in-store labelling of hazardous substances to inform consumer purchasing and waste management decisions.</p>	<p>Ongoing</p> <p>By Q4-2021</p> <p>By Q2-2022</p> <p>By Q4-2022</p>	<a href="#">4.1</a> and <a href="#">4.2</a>
6	Prevent hazardous waste in industrial sectors and support a safe circular economy.	EPA/DECC	<p>Utilise the regulatory regime to encourage usage of less-toxic alternatives in production and processing steps.</p> <p>Review the environmental regulatory framework as a means to promote circularity in industrial processes and reduce industrial waste generation.</p>	<p>Ongoing</p> <p>Ongoing</p>	<a href="#">4.1</a> and <a href="#">5.6</a>
7	Support applied research to inform policy & industry on hazardous waste prevention.	EPA	<p>Provide research funding focussed on reducing use of hazardous substances in commercial operations.</p> <p>Support research &amp; surveys to develop behavioural insights regarding public attitudes and actions on hazardous waste.</p>	<p>Ongoing</p> <p>Ongoing</p>	<a href="#">4.5</a>

8	Use Green Public Procurement (GPP) to specify products & services that reduce the use of hazardous substances and generation of associated hazardous wastes.	OGP/EPA	Implementation of GPP criteria and practices.  Establish supports for the transition to greener purchasing through guidance, and training for purchasers & suppliers.	Ongoing  By Q4-2021	<a href="#">4.2</a>
<b>COLLECTION &amp; TREATMENT</b>		Target objectives: <i>Collection; Proximity; Regulation; Circular Economy.</i>			
9	Strengthen knowledge of national hazardous waste capacity to inform infrastructure development and contingency planning, in accordance with application of the proximity principle.	EPA, DECC	Update & maintain inventory of national capacity for storage, treatment and disposal of hazardous wastes.  Examine legislation and procedures for development of waste management infrastructure, as stated in the Waste Action Plan for a Circular Economy.	By Q2-2022  Ongoing	<a href="#">6.1</a>
10	Prepare for separate collection of hazardous waste fractions produced by households.	DECC	Carry out a review of waste licensing and permitting legislation to facilitate take-back, transport and temporary storage of certain hazardous wastes from small sources.  Establish collection of household and small-scale hazardous waste through civic amenity sites and/or via special collections.	By Q2-2022  By Q4-2024	<a href="#">5.1</a>
11	Establish nationwide collection and transfer of farm hazardous wastes, including unused veterinary products.	DECC/DAFM	Develop and agree a plan for a suitable national collection scheme, having regard to findings from the 2013-2017 pilot scheme.	By Q2-2022	<a href="#">5.3</a>
12	By 2023 establish national collection of surplus and out-of-date medicines from household waste stream.	DECC/Dept of Health	Develop a proposal with options, building on experience with DUMP project; EPA characterisation report; and stakeholder input.  Implement a nationwide collection system.	By Q2-2022  By Q2-2023	<a href="#">4.1</a> and <a href="#">5.2</a>

13	By 2023, establish collection platforms for surplus paint from household and commercial sources.	DECC/RWMPOs	Build on current initiatives to initiate nationwide, large-scale collection(s), in collaboration with local authorities and industry.	By Q2-2023	<a href="#">5.1</a>
14	Promote best practice in the management of commercial hazardous wastes streams.	EPA	<p>Publish Smart Garage guide and promote responsible management of waste oils and other wastes from vehicle maintenance operations.</p> <p>Prepare and publish guidelines for the safe storage of Lithium-ion batteries at waste handling facilities.</p> <p>Develop training to promote awareness on identification and proper management of hazardous fractions in C&amp;D waste.</p>	<p>By Q3-2021</p> <p>By Q4-2021</p> <p>By Q4-2022</p>	<a href="#">5.4</a> and <a href="#">5.5</a>
15	Promote best practice in the management of asbestos-contaminated waste	EPA	Produce best-practice guide for handling asbestos waste; and identify options for collection of asbestos and asbestos-contaminated wastes.	By Q2-2022	<a href="#">5.4</a>
16	Put in place arrangements for temporary storage of orphan radioactive sources.	EPA	Identify options for the temporary safe and secure storage of orphan radioactive wastes, pending disposal.	By Q2-2022	<a href="#">5.7</a>
17	Remediate identified legacy waste disposal sites containing hazardous waste.	Local authorities	Continued remediation of sites, in line with EPA Code of Practice and appropriate authorisations.	Ongoing	<a href="#">5.9</a>
<b>IMPLEMENTATION</b> Target objectives: <i>Prevention; Collection; Proximity; Regulation; Circular Economy.</i>					
18	Report annually on hazardous waste generation and treatment in Ireland, with a breakdown by category/sector.	EPA	<p>Expand reporting protocols to provide more detailed data to inform measures and policy options for best practice on hazardous waste management.</p> <p>Conduct hazardous waste characterisation studies from household and commercial bins.</p>	<p>Annually</p> <p>By Q2-2022</p>	<a href="#">3.1</a>

19	<b>Provide leadership on achievement of NHWMP objectives; with regular progress reports on implementation of the plan recommendations.</b>	<b>EPA</b>	<p>Establish a working group to support implementation of plan recommendations.</p> <p>Provide an annual update on progress of plan recommendations.</p> <p>Conduct a mid-term review of the NHWMP and update actions for the second half of the plan.</p>	<p>By Q3-2021</p> <p>Annually</p> <p>By Q4-2024</p>	<a href="#">7.5</a>
----	--	------------	--	---	---------------------



## PART 2: HAZARDOUS WASTE IN IRELAND

### 3. Hazardous Waste Management

This chapter provides details on the type, quantity and origin of hazardous waste arising in Ireland. Hazardous waste is produced from a wide variety of sources and covers many waste types. Industrial operations are the largest generator of hazardous waste in Ireland, producing solvents, sludges, oils and chemicals. Many other sectors such as construction, healthcare, waste incinerators, farms and households also produce a range of hazardous wastes, including paints, oils, batteries, pesticides, asbestos and contaminated soils.

The EPA is the national authority for the compilation of national hazardous waste. These are compiled from a number of data sources including:

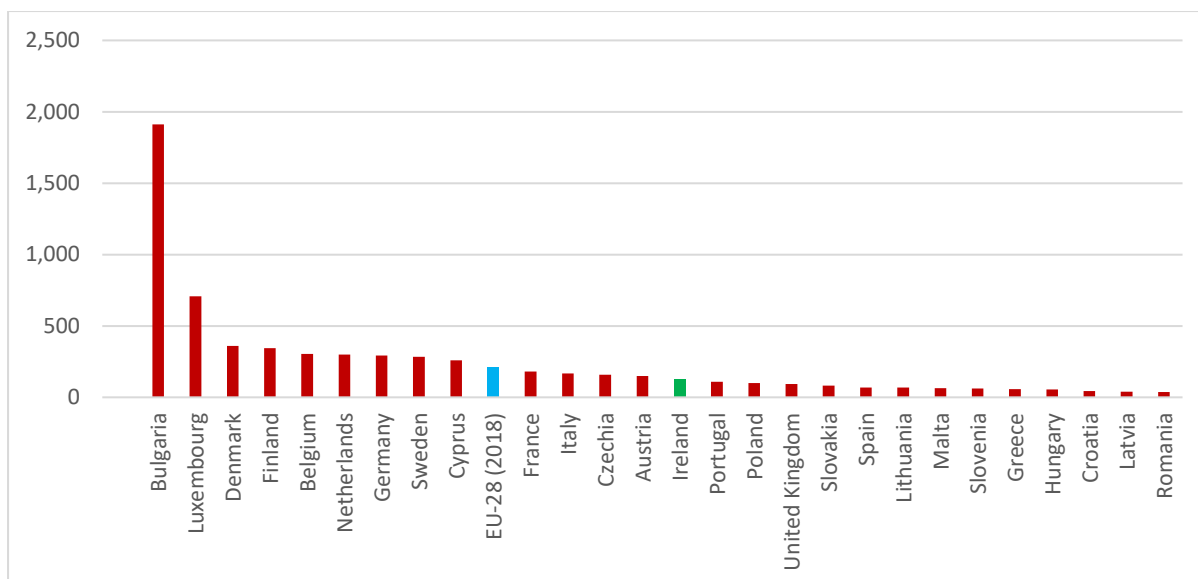
- Pollutant Release & Transfer Registers and Annual Environmental Reports on the treatment of hazardous waste on-site at the industry where it was generated (which occurs under EPA licence, mainly at companies in the pharmachem sector).
- Data on the treatment of hazardous waste off-site at commercial facilities in Ireland obtained by way of the hazardous waste treatment survey, which is sent to facilities that are licensed by the EPA or permitted by the local authorities to treat hazardous wastes.
- Import and export data for hazardous waste for treatment as provided by the National Transfrontier Shipment Office (NTFSO), Dublin

To produce comparable and reliable data on waste generation and treatment, clear definitions and a common understanding of waste classification are used. The Regulation (EC) 2150/2002<sup>3</sup> on waste statistics<sup>1</sup> obliges Member States to report statistical data on waste generation and waste treatment according to the statistical waste nomenclature EWC-Stat. The EWC-Stat is mainly a substance-oriented aggregation of the waste types defined in the European List of Waste (LoW).<sup>4</sup> The methodology on calculating the categories of hazardous waste data changed in 2016 to align with Eurostat reporting requirements. This reporting activity allows the development of comparative statistics on hazardous waste generation allowing assessment of Ireland's performance in relation to other EU Member States. Figure 3.1 below shows that Ireland's per capita generation of hazardous waste in 2018 was below the EU average.

---

<sup>3</sup> <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32002R2150&from=EN>

<sup>4</sup> <https://ec.europa.eu/environment/waste/framework/list.htm>



**FIG 3.1: KILOGRAMS PER CAPITA OF HAZARDOUS WASTE GENERATED IN EU MEMBER STATES (2018)<sup>5</sup>**

### 3.1 Hazardous waste in Ireland

The estimate of hazardous waste generated in Ireland in 2019 is 580,977<sup>6</sup> tonnes (t). As shown in Figure 3.2, there was an increase of over 54,000 t in 2019 when compared with 2018 continuing a trend that indicates hazardous waste generation has not decoupled from economic growth. The top four categories of hazardous waste generated in 2019 were:

- Wastes from waste treatment operations such as incinerator bottom ash, fly ash, boiler ash and residues from flue gas and air pollution control at waste-to-energy facilities (152,635 t);
- Contaminated soil from development of old industrial facilities & brownfield sites (90,595 t);
- Chemical reaction residues (65,509 t);
- Solvents (46,813 t).

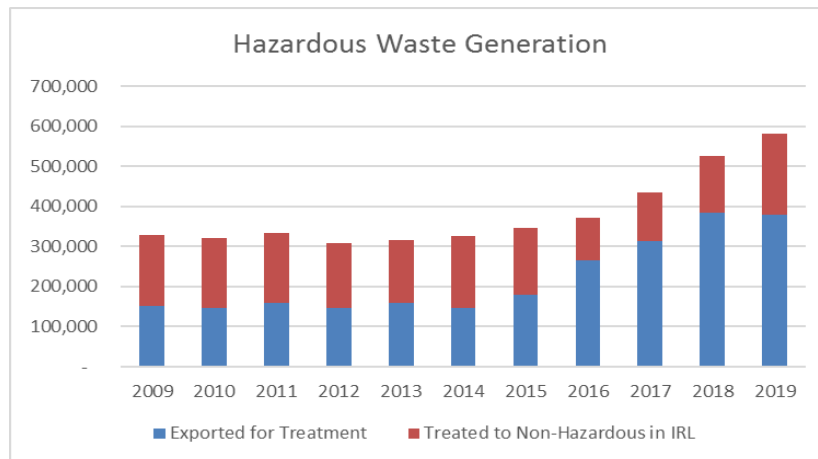
Other notable trends from 2019 hazardous waste data include:

- An increase of 25,155 t in hazardous waste treated on site of generation by licensed facilities. This includes contaminated soil treated on-site at Limerick Gasworks and hazardous dredging spoil from Dublin Port.
- An increase of 23,611 t in the treatment of various hazardous waste types from various sources to non-hazardous at Irish treatment facilities.

<sup>5</sup> Source: Eurostat. For clarity, data for Estonia is omitted - 8,230 kg/capita due to energy production from oil shale.

<sup>6</sup> At the end of 2019, incinerator bottom ash from Dublin Waste to Energy was reclassified as non-hazardous waste and therefore a decrease of the order of 100,000 t in hazardous waste generated can be expected in 2020.

- An increase of 24,204 t in hazardous waste exported for treatment.
- Treatment of hazardous soil at Irish treatment facilities increased by 10,330 t in 2019. There was a decrease of over 28,000 t of hazardous soil export to 46,000 t in 2019. This is reducing from a peak of over 100,000 t in 2017.



**FIGURE 3.2 HAZARDOUS WASTE GENERATION IN IRELAND (TONNES)**

The amount of hazardous waste generation in Ireland had been relatively consistent from 2009 to 2014, at approximately 300,000 t. However, since 2015 there has been a relatively rapid increase in the volume of hazardous waste generated. Incinerator ash and contaminated soils have been significant contributing factors in this increase, however incinerator bottom ash is no longer classified as hazardous and this should be observable in waste statistics from 2020 onwards.

#### Key recommendation:

Report annually on hazardous waste generation and treatment in Ireland, with a breakdown by category/sector.

- *Expand reporting protocols to provide more detailed data to inform measures and policy options for best practice on hazardous waste management.*
- *Conduct hazardous waste characterisation studies from household and commercial bins.*

#### Incinerator Bottom Ash

There are currently two Waste-to-Energy facilities operating in Ireland, at Carranstown, Co. Meath and Poolbeg, Dublin. These thermal treatment plants significantly reduce the volume of waste for disposal but there are nevertheless residues remaining from after the combustion process, comprising: Incinerator Bottom Ash, Boiler Ash and Flue Gas Treatment Residues. Incinerator Bottom Ash typically accounts for 50% of these residues and in 2019, Ireland generated 80,000 tonnes of this material, which was exported for disposal. Although initially classified as a hazardous waste, the operators from each facility have now satisfied the EPA that this material is non-hazardous and that it can be safely disposed of in a conventional landfill. These decisions are in line with practice across the EU and will result in a reduction in Ireland's hazardous waste

generation figures. Boiler ash and flue gas treatment residues continue to be classified as hazardous waste.

## 3.2 Hazardous waste treatment in Ireland

Hazardous waste must be treated to reduce its potential to pollute the environment or to threaten human health. Ireland's hazardous waste is treated either on-site at the industrial facility where the waste was generated (under conditions of EPA licence), off-site at hazardous waste treatment facilities in Ireland, or at facilities in other countries.

### *On-site treatment at industrial facilities*

In 2019, fifteen EPA-licensed industrial facilities fully treated 55,282 tonnes of hazardous waste arising from their manufacturing operations. Table 3.1 shows the range of disposal and recovery activities carried out in Ireland. Approximately 40,000 t of this went for disposal and almost 15,000 t was recovered.

Hazardous waste treated on-site increased by approximately 25,000 t in 2019. This was due to 15,000 t of contaminated soil from Limerick Gas Works that was treated and deposited back on land within the site and 10,000 t of dredging spoil at Dublin Port that was remediated and recovered.

### *Treatment at waste management facilities*

In addition to the above, Irish hazardous waste treatment facilities treated 146,309 t of hazardous waste to non-hazardous status in 2019, an increase of 30% on the previous year. The locations of these facilities are shown in Figure 3.2. Waste types treated included contaminated soils, used motor oil, healthcare wastes, sludges, filter cakes, absorbents, laboratory and chemical waste and household hazardous waste from civic amenity sites. This waste is treated until it is non-hazardous; the non-hazardous wastes that result are then further treated either in Ireland or abroad.

**TABLE 3.1: HAZARDOUS WASTE TREATMENT ACTIVITIES CARRIED OUT IN IRELAND, 2019**

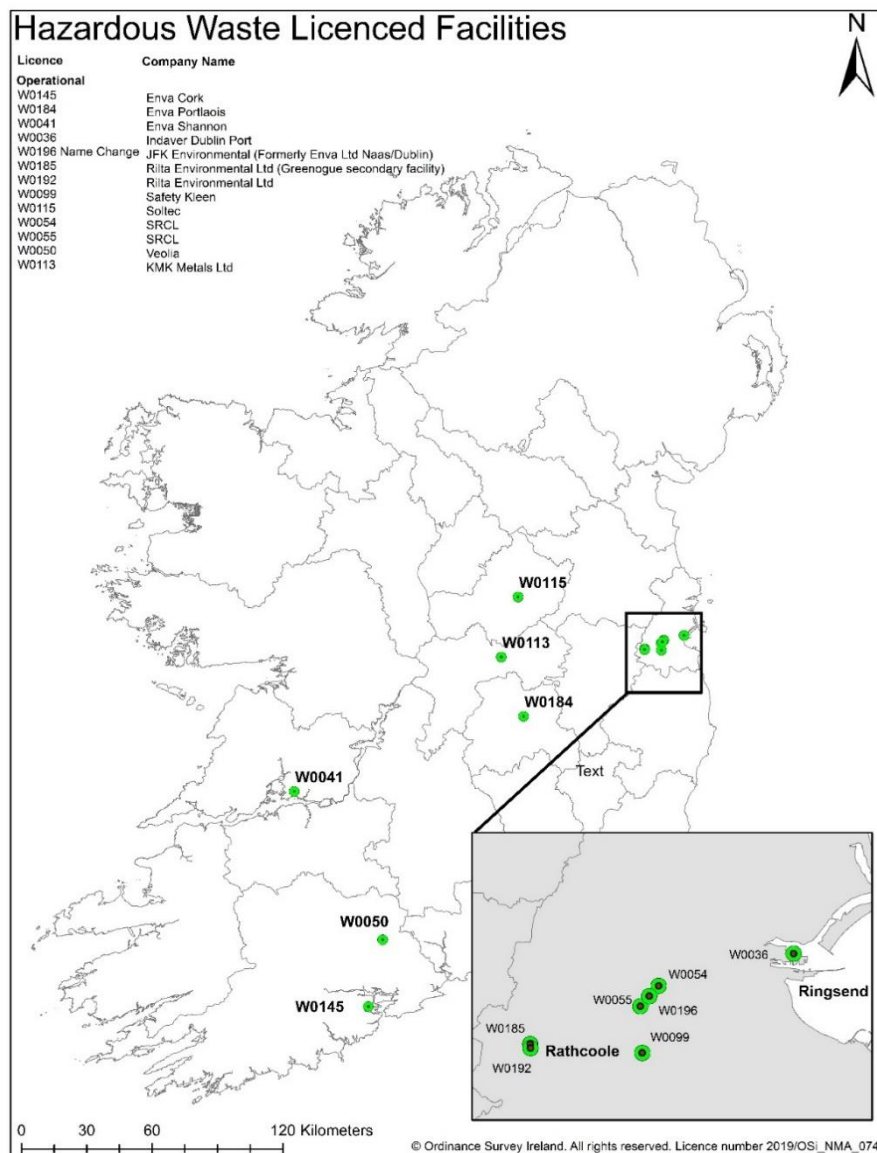
Category	Treated at site of generation in Ireland (t)	Treated at hazardous waste facilities in Ireland (t)	Total (t)
12.61 Soils	15,360	29,062	44,422
03.12 Oils/water emulsions sludges		21,620	21,620
01.31 Used motor oils		21,157	21,157
12.31 Waste of naturally occurring minerals	16,224		16,224
08.23 Other discarded electrical & electronic equipment		16,167	16,167
03.13 Chemical reaction residues	130	15,363	15,493
01.12 Non-halogenated spent solvents	12,727	1,741	14,468
05.11 Human infectious health care wastes		11,014	11,014
12.71 Dredging spoil	10,538		10,538
10.32 Other sorting residues		8,373	8,373
03.21 Sludges from industrial processes & effluent treatment		6,151	6,151

01.21 Acid wastes		5,210	5,210
01.32 Other used oils		2,962	2,962
02.12 Unused medicines	153	1,272	1,425
02.33 Packaging polluted by hazardous substances		1,346	1,346
02.31 Minor mixed chemical wastes		901	901
03.31 Sludges and liquid wastes from waste treatment		869	869
01.22 Alkaline wastes		717	717
02.13 Paints, varnish, inks and adhesive wastes		639	639
03.22 Sludges containing hydrocarbons		524	524
03.14 Spent filtration and absorbent materials		507	507
02.14 Other chemical preparation wastes		243	243
10.22 Other mixed and undifferentiated materials		211	211
01.11 Halogenated spent solvents	148	26	174
05.12 Animal infectious health care wastes		94	94
01.24 Other saline wastes		78	78
12.52 Waste refractory materials		61	61
02.21 Waste explosives and pyrotechnical products	3		3
<b>Total</b>	<b>55,282</b>	<b>146,309</b>	<b>201,591</b>

A total of 201,591 t is treated to non-hazardous in Ireland. Of this, 62% is disposed of, and 38% is recovered, as shown in Table 3.2 below.

**TABLE 3.2: DISPOSAL & RECOVERY OF WASTE IN IRELAND, 2019**

Category	Treated on site of generation (t)	Treated at hazardous waste facilities (t)
D1 – Landfill	16,224	
D13/D1 – Blending or mixing prior to deposit into or onto land	15,490	
D13/D10 – Blending or mixing prior to submission to incineration	9,146	
D15 – Storage		634
D8 – Biological treatment	1,178	
D9 – Physico-chemical treatment	124	82,589
R1 – Waste to energy	1,133	17,811
R2 – Solvent recovery	1,449	
R3 – Organic substance recovery		333
R4 – Metal recycling		16,361
R5 – Inorganic substance recovery	10,538	
R9 – Distillation, physico-chemical treatment, sterilisation, bulking up		28,581
<b>Grand total</b>	<b>55,282</b>	<b>146,309</b>



**FIGURE 3.2: EPA-LICENSED HAZARDOUS WASTE FACILITIES IN IRELAND**

### 3.3 Hazardous waste capacity

There is currently no commercial hazardous waste landfill or hazardous waste incinerator in Ireland and no facility for radioactive waste treatment. This lack of infrastructure is a risk to the state. While the EU single market gives security of movement, there are risks that export markets for hazardous wastes could close at short notice because of lack of capacity or cost factors.

In 2017, the EPA commissioned a study to investigate hazardous waste capacity in Ireland. This work noted downward trends in the generation of solvent waste from the pharma-chem sector; and that there was currently significant spare solvent treatment capacity within the commercial waste operators. It concluded that the key waste streams in the current and future generation of hazardous waste include solvents and waste oil. The study also concluded that there is a

requirement for the development of hazardous waste landfill capacity – either as a new cell designed for purpose or at an existing landfill where capacity exists that may be developed with the necessary infrastructure.

**Key recommendation:**

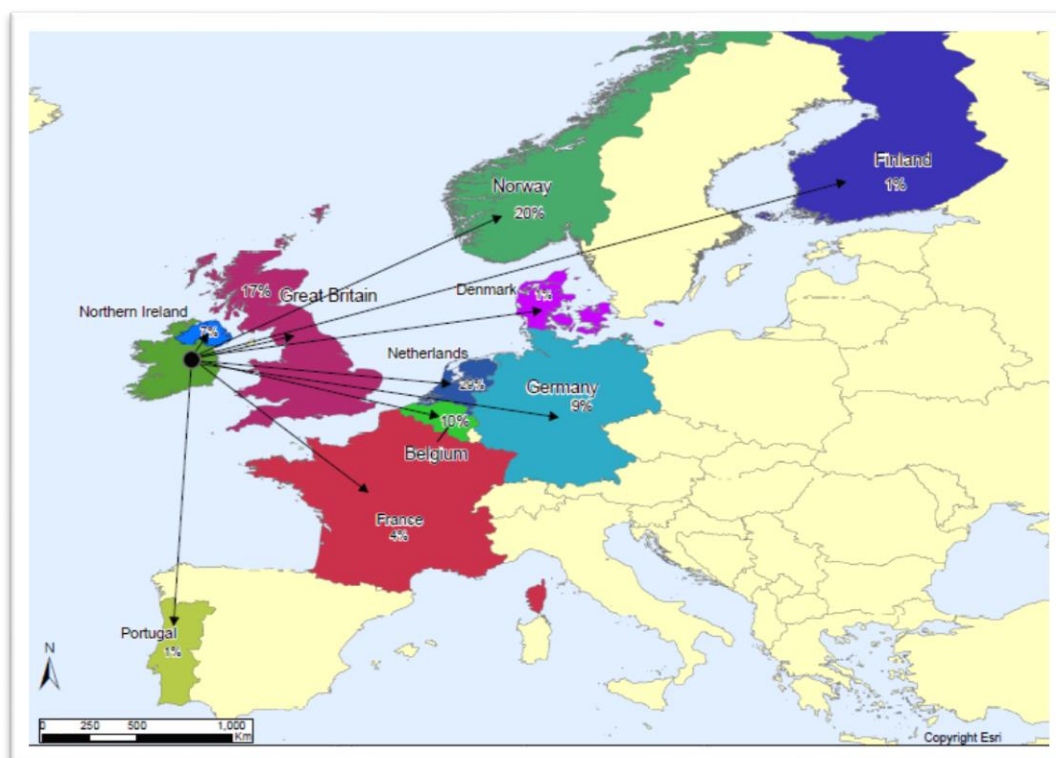
Strengthen knowledge of national hazardous waste capacity to inform infrastructure development and contingency planning, in accordance with application of the proximity principle.

- *Update & maintain inventory of national capacity for storage, treatment and disposal of hazardous wastes.*
- *Examine legislation and procedures for development of waste management infrastructure, as stated in the Waste Action Plan for a Circular Economy.*

### 3.4 Exports of Hazardous Waste

Ireland does not have the facilities, or economies of scale, required to treat the full range of hazardous wastes it produces. Most (65%) of Ireland's hazardous waste was exported for treatment in other European countries in 2019 (compared with 73% in 2018).

Figure 3.3 below indicates the countries that accepted this waste for treatment. The Netherlands, Norway, Great Britain, Belgium, Germany, Northern Ireland, France and Portugal together accepted 98% of hazardous waste exports in 2019. A rise in waste sent to the Netherlands in 2018 continued in 2019, due to approximately 100,000 t annually of ash from municipal waste incinerators.



**FIG 3.3: DESTINATION COUNTRIES OF EXPORTED HAZARDOUS WASTE**



There are mutual benefits to be realised for Ireland and Northern Ireland from taking all-island approaches to some environmental issues, including management of hazardous waste. Through existing structures there has been good cooperation on common policies and approaches, although the withdrawal of the United Kingdom from the European Union in 2020 will impact on this. In the context of facilitating and regulating the movement of hazardous waste across the border for treatment, there is a need to establish new arrangements on this issue.

#### Key recommendation:

Provide for all-island approaches on hazardous waste issues.

- *Establish a working group with Northern Ireland authorities to maximise opportunities for co-ordinated management and enforcement of hazardous waste activities.*

#### Contaminated soils

Exports of contaminated soil fell for a second year in 2019, to just over 46,000 tonnes. Most of this is exported to Norway (38,560 tonnes). Contaminated soils come from old industrial sites such as gas works, mines, tanneries, dock yards and petrol stations, which are often contaminated with hazardous chemicals.

In 2019 the total amount of contaminated soil generated in Ireland was just over 90,000 tonnes, a decrease of 3,000 tonnes from 2018, as shown in Figure 6. Treatment in Ireland almost equalled treatment abroad in 2019 due to an increase to 29,000 tonnes treated at Irish hazardous waste treatment facilities and over 15,000 tonnes of contaminated soil treated on-site at Limerick Gas Works.

### 3.5 Characterisation of household & commercial hazardous waste

In 2018, the EPA conducted a waste characterisation study to investigate the composition of the national kerbside-collected household and commercial waste. As shown in Figure 3.4, the study found that hazardous waste (excluding waste electrical and electronic equipment (WEEE)) increased from 0.9% in 2008 to 1.2% in 2018; and that WEEE increased from 0.3% to 0.9%, for the same period. Hazardous waste in any of the kerbside collection bins, has the potential to cause significant contamination of the household waste stream, which is managed as non-hazardous.



FIG 3.4: MUNICIPAL WASTE CHARACTERISATION OF HOUSEHOLD (LEFT) AND COMMERCIAL (RIGHT) RESIDUAL WASTE BINS



### 3.6 Unreported hazardous waste

Providing accurate estimates of unreported hazardous waste is very difficult. Some of this waste may end up in general domestic or commercial waste, or it may be disposed of in an uncontrolled manner by burning, burying or discharge to sewer, water or surface ground.

Illegal burning of waste can lead to release of dioxins, which pose a serious risk to human health and the environment. 'Dioxins' is a collective term for a group of chemical compounds that can be formed when carbon-containing material is burned at low temperature. This happens predominantly from residential combustion and backyard burning of waste. The EPA-led National Ambient Air Monitoring Programme monitored dioxin levels in 2019 at selected locations across Ireland. Concentrations observed were in line with previous years' measured results and well below European limit values.

### 3.7 Covid-19 Impacts

The global pandemic sparked by the emergence of Covid-19 brought operational changes for healthcare and many other sectors, which resulted in changes to the types and volumes of hazardous wastes generated. This situation was compounded by restrictions to normal business processes and reduced manpower due to sickness and quarantining. As an example of these impacts, cement plants in Ireland and across Europe were shut down due to Covid restrictions and reductions in demand. This had a significant consequential impact on treatment of hazardous waste from manufacturing sites which had been used as a supplementary fuel in cement kilns.

In common with all sectors of the economy, this placed strain across the entire waste management sector. In particular, generation of healthcare risk wastes increased – and a report from EPA during earlier phase of the pandemic showing tonnages of healthcare risk waste produced by the HSE had increased by 24%. During this challenging period, public and private sector organisations worked closely together to address issues arising; and at time of writing, it is noted that no major issues have been reported in terms of system failures.

As this crisis abates, there is an opportunity to learn from the pressure points detected in the system and the measures taken to address them. This work should consider and present options to strengthen the resilience and preparedness of the country to effectively manage hazardous waste during similar future major shock events – whether health-based or otherwise.

#### Key recommendation:

Strengthen systemic resilience for management of hazardous waste.

- *Commission a review of hazardous waste management during the COVID-19 pandemic.*
- *Conduct a business continuity assessment for Ireland's hazardous waste management system to identify at-risk waste streams and associated infrastructure.*

## 4. Prevention of Hazardous Waste

Reducing the amount of hazardous waste generated at source and reducing the hazardous content of waste is regarded as the highest priority according to the Waste Hierarchy established in the Waste Framework Directive. Prevention means measures taken before a substance, material or product has become waste, that reduce:

- a) quantity of waste, including through the reuse of products or the extension of the life span of products;
- b) adverse impacts of the generated waste on the environment and human health; or
- c) content of harmful substances in materials and products.

The importance placed on waste prevention at a European level is evident in the Waste Framework Directive, which requires that Member States must establish a waste prevention programme. Ireland's National Waste Prevention Programme is led by the EPA and supports national-level, strategic programmes to prevent waste and drive the circular economy in Ireland. The circular economy concept is very relevant to hazardous waste management in that it will drive a diversion from disposal into reuse and recycling routes. This means that the presence of hazardous substances in materials and products must be carefully monitored and appropriately considered in developing circular economy practices and processes.

This chapter addresses a range of issues that require consideration in delivering effective prevention action for Ireland's hazardous waste stream.

### 4.1 Key prevention sectors

Following from the previous plan, priority areas have been identified for continuous engagement on hazardous waste prevention. These priority areas generate the largest volumes of hazardous waste and/or have the most potential to affect human health and the environment

#### *Household hazardous waste*

Households generate a range of small quantities of hazardous waste from the disposal of domestic products that contain hazardous substances. Effective segregation and collection of these wastes for appropriate treatment is critical and is highlighted in this plan. However, prevention actions to reduce the quantity, variety and toxicity of household hazardous waste are a priority focus.

In many cases, regulatory impetus and technological development have both acted to prevent household hazardous waste by removing or reducing the hazardous content of consumer products. Examples of this include the phase-out of cadmium and mercury in batteries, and the increased prevalence of water-based paints. Policy makers and industry have a significant responsibility to continue take steps to reduce the hazardous content and provide for appropriate disposal and recovery of waste arisings.

In addition to action in the marketplace, householders can take responsibility for reducing hazardous waste through their choices and practices. Raising public awareness of household hazardous waste and drawing attention to options for waste prevention is a fundamental first step in stimulating behavioural change. Using less chemicals in the home will result in less hazardous waste requiring disposal. The EPA and the RWMOs have produced a number of publications highlighting the health and environmental risks of household chemicals. The NHWMP encourages further campaigns by public bodies and waste management operators to increase awareness of the environmental and health risks associated with household products containing hazardous substances and to highlight practical, effective alternatives through communication platforms such as the EPA website and DECC's [www.mywaste.ie](http://www.mywaste.ie) site.



#### Key recommendation:

Promote reduced consumption of hazardous substances in household settings.

- *Conduct awareness raising campaigns to highlight best-practices and alternatives, with initial focus on paints, cleaning products and gardening chemicals.*
- *Develop new coherent information on household hazardous waste and guidance on disposal of hazardous waste; and disseminate via targeted & national campaigns; and through the EPA website & [www.mywaste.ie](http://www.mywaste.ie).*
- *Conduct national survey on householder awareness & behaviours regarding hazardous substances to inform prevention initiatives and measures.*
- *Examine potential of product & in-store labelling of hazardous substances to inform consumer purchasing and waste management decisions.*

#### *Healthcare risk waste*

Healthcare risk waste comprises approximately 11,000 tonnes of hazardous waste per annum. Following its establishment by the EPA, the Green Healthcare programme continues to operate with funding from the Health Service Executive (HSE) through the National Health Sustainability Office. The National Health Sustainability Office works with Irish hospitals to conserve water, reduce healthcare risk waste, reduce food waste and increase recycling.

The principal focus of healthcare risk waste at national level is with the HSE. Considerable work is ongoing in relation to promoting best practice waste management within the HSE. Research carried

out by the HSE found that only 66% of healthcare risk waste is hazardous. Awareness campaigns are ongoing to improve prevention and segregation of hazardous healthcare risk waste.

Key recommendations:

Strengthen systemic resilience for management of hazardous waste.

- *Commission a review of hazardous waste management during the COVID-19 pandemic.*
- *Conduct a business continuity assessment for Ireland's hazardous waste management system to identify at-risk waste streams and associated infrastructure.*

By 2023, establish national collection of surplus and out-of-date medicines from household waste stream.

- *Develop a proposal with options, building on experience with DUMP project; EPA characterisation report; and stakeholder input.*
- *Implement a nationwide collection system.*

### *Chemical & pharmaceutical industry*

The chemical/pharmaceutical industry represents the largest share of total hazardous waste generated in Ireland. The industry is making significant efforts to develop cleaner and more efficient processes for manufacturing pharmaceuticals. Advancement in technology and change in manufacturing process has resulted in a reduction in solvent waste from this sector. During the lifetime of the next plan, continued focus should be placed on further reducing the volumes of solvents produced and alternatives to exporting this waste stream.

Recent years have seen a transition in Ireland away from the manufacture of active pharmaceutical ingredients by bulk synthesis and chemical manufacture to biologically-based production processes. Over the past 10 years, Ireland has seen over €10 billion of investment in biopharmaceutical production. This investment has resulted in Ireland's biotechnology manufacturing base increasing from three facilities in 2004 to over 20 facilities in operation, under construction or in planning today. Based on the available data to date, it is apparent that hazardous waste generation is reduced at Biologically based production processes compared to traditional chemical production as no hazardous chemicals involved in the manufacturing process other than minor quantities for chromatography storage and cleaning purposes.

Key recommendation:

Prevent hazardous waste in industrial sectors and support a safe circular economy.

- *Utilise the regulatory regime to encourage usage of less-toxic alternatives in production and processing steps.*
- *Review the environmental regulatory framework as a means to promote circularity in industrial processes and reduce industrial waste generation.*

## 4.2 Green Public Procurement

Green Public Procurement (GPP) is a process whereby public and semi-public authorities meet their needs by choosing solutions that have a reduced impact on the environment throughout their life-cycle, as compared to alternative products/solutions. Through the application of green criteria at the specification stage, public bodies can purchase goods and services which are manufactured without materials which are hazardous to human health and the environment; which emit fewer toxic substances during use; and which result in a reduced release of toxic substances to the environment upon disposal. In addition, the inclusion of take-back procedures for suppliers can support improved management of surplus & end-of-life products and used packaging.

Wording for green criteria could require that hazardous substances must not be used in the production process or present in the final product in amounts above the below thresholds. The European Commission, in partnership with the Member States developed GPP criteria for 20 product and service categories<sup>7</sup>. In Ireland, GPP criteria for ten priority sectors have been published which incorporate hazardous waste considerations including avoidance of hazardous substances in products and highlighting wastes requiring specialist handling and treatment. Guidance to support across key purchasing categories ICT products & services; printing services; textile products & services; and cleaning products and services.

Given that public sector purchasing accounts for up to 12% of Ireland's gross domestic product each year, GPP also has significant potential to create a critical mass of demand in terms of building the markets for less hazardous goods and services. The government recognises the powerful environmental effect of GPP and the leadership role that the public sector can demonstrate through GPP. It has set an ambitious target that by 2023, all procurement using public funds will include green criteria.

### Key recommendation:

Use Green Public Procurement (GPP) to specify products & services that reduce the use of hazardous substances and generation of associated hazardous wastes.

- *Implementation of GPP criteria and practices.*
- *Establish supports for the transition to greener purchasing through guidance, and training for purchasers & suppliers.*

## 4.3 EU Chemicals Strategy

The European Green Deal articulates an ambition for a toxic-free and zero-pollution future that offers increased protection of human health and the environment against hazardous chemicals. The EU Chemicals Strategy for Sustainability has among its objectives two interrelated aims, namely the attainment of the Zero Pollution Ambition and ensuring that all chemicals are used more safely and

---

<sup>7</sup> [https://ec.europa.eu/environment/gpp/eu\\_gpp\\_criteria\\_en.htm](https://ec.europa.eu/environment/gpp/eu_gpp_criteria_en.htm)

sustainably within a circular economy. The strategy intends, among other things, to reduce quantities of hazardous substances in waste streams. Additionally, the strategy strives to reduce the current lack of coherence between chemicals, product and waste legislation, which has hindered a consistent approach to chemicals regulation. For example, waste PVC may contain hazardous plasticisers such as phthalates and so be designated as hazardous under the REACH regime; however, such materials may go unnoticed under waste-related legislation and inappropriately re-enter the production process as feedstock.

The EU Chemicals Strategy has, as one of its core recommendations, the attainment of effective enforcement regarding compliance with environmental and related legislation through a Zero Tolerance for Non-compliance policy. This approach recognises the potentially very significant contribution the effective enforcement of some key legislation can make towards attainment of the Zero Pollution and Circular Economy ambitions. Such legislation includes, but is not limited to, the following:

- Restriction on the Use of Certain Hazardous Substances (RoHS) Directive:
- Batteries and Accumulators and Waste Batteries and Accumulators
- Packaging and Packaging Waste (Packaging) Directive
- End-of-Life Vehicles Directive
- The Registration, Evaluation, Authorisation and Restriction (REACH) Regulation
- Persistent Organic Pollutants (POPs) Regulation
- Biocidal Products Regulation (BPR, Regulation (EU) 528/2012)

**Key recommendation:**

Ensure a coordinated national approach on hazardous waste in the context of the Circular Economy, with focus on prevention.

- *Incorporate prevention & management of hazardous waste into the national Circular Economy Programme.*
- *Incorporation of relevant NHWMP objectives in national waste management planning.*
- *Support HSA-led implementation of the EU Chemicals Strategy for Sustainability Towards a Toxic-Free Environment as it relates to hazardous waste management.*

## Chemicals of concern

While hazardous substances may, by their very nature, present risks to human health and/or the environment, some substances are afforded particular attention due to the high, or in some cases unknown, levels of risks they pose. The monitoring and assessment of chemicals associated with potentially high environmental and/or human health threats needs to be prioritised. Many of these particularly hazardous substances can be found in certain waste streams, such as brominated flame retardants in plastics and building materials. Solutions to challenges posed by the legacy issues of hazardous substances in waste are complex. Promoting the Circular Economy will require a combination of enforcement of relevant legislation and investment in innovation to provide, where technically and economically feasible, clean material cycles, so reducing the reintroduction of certain hazardous chemicals into production feedstocks. Some of the substances such as Brominated flame retardants (BFRs) - PBDE and HBCDD and Poly- and perfluoroalkylated substances pose significant risks to human health and the environment are detailed in Appendix D. While production and use of many of these chemicals has been banned in the EU for some time, they are likely to be found in various waste streams into the future.

## 4.4 Labelling

Hazard labelling is an important tool for communicating on the classification of the hazardous nature of substances and products. Clear and comprehensible labelling informs users on precautions to take during use, provides information to understand suitable usage of the product; and prompts users to exercise appropriate care in after-use disposal. From a prevention point of view, labelling also allows purchasers to make informed purchasing choices with regard to selecting certain products over others based on the advised hazardousness.

In addition to 'negative' labelling of products containing hazardous substances, labels can also highlight products and services that have a lower environmental impact than comparable alternatives. The EU Ecolabel is recognised in all member states as well as Norway, Iceland and Liechtenstein, and allows consumers to identify more environmentally friendly and healthier products. The label applies across a wide range of goods from detergents and cleaning agents to textiles and shoes, lubricants, paints and varnishes.

The responsibility for labelling lies with the manufacturer of a substance, an importer of a substance or a mixture and/or downstream user i.e., a formulator of a mixture who supplies, or makes available, hazardous substances and/or mixtures to a third party, whether professional or consumer, within the European Union. Along with appropriate labelling, there is further responsibility on these organisations to provide supports to ensure purchasers and users understand the information provided and can respond accordingly.

### Key recommendation:

Promote reduced consumption of hazardous substances in household settings.

- *Conduct awareness raising campaigns to highlight best-practices and alternatives, with initial focus on paints, cleaning products and gardening chemicals.*

- *Develop new coherent information on household hazardous waste and guidance on disposal of hazardous waste; and disseminate via targeted & national campaigns; and through the EPA website & [www.mywaste.ie](http://www.mywaste.ie).*
- *Conduct national survey on householder awareness & behaviours regarding hazardous substances to inform prevention initiatives and measures.*
- *Examine potential of product & in-store labelling of hazardous substances to inform consumer purchasing and waste management decisions.*

## 4.5 Research & innovation

Research has an important role to play in meeting the objectives of the NHWMP, particularly with regard to improving the understanding of the context for hazardous waste management including material and waste flows and barrier to enhanced prevention and treatment. In addition, scientific innovation yields novel approaches that reduce the use of hazardous substances in circulation and improve management of those that are captured in the waste stream. Priority topics for research in this area include:

- Replacing hazardous substances in industrial processes.
- Eco-design to eliminate hazardous residues in manufacture or at end of life.
- Recycling and recovery solutions for hazardous wastes previously sent for disposal.
- Life-cycle analysis, as well as environmental fate and transport studies.
- Determination of standards for secondary products derived from hazardous materials.

The government is an important driver for research in this area with funding provided through national research and innovation programmes such as EPA Research and Science Foundation Ireland which fund work in universities and other research organisations. In addition, the EPA offers support via its Green Enterprise Programme to businesses that are pursuing cleaner technology approaches.

There is also significant investment in innovation towards prevention or reduction of hazardous waste streams within manufacturing companies. In this case the impetus for innovation can come through corporate social responsibility commitments; investor expectations; cost; regulatory obligations; and emerging policy direction such as that indicated in the European Green Deal. Increasing pressures are also coming from the marketplace, with the public seeking assurances of ever higher environmental standards with regard to consumer goods.

### Key recommendation:

Support applied research to inform policy & industry on hazardous waste prevention.

- *Provide research funding focussed on reducing use of hazardous substances in commercial operations.*
- *Support research & surveys to develop behavioural insights regarding public attitudes and actions on hazardous waste.*



## 5. Hazardous Waste Collection

Many of the substances used every day in households, small businesses and farms contain hazardous substances and if disposed of incorrectly will impact on human health and/or the environment. Inadequate collection infrastructure for hazardous waste is a barrier to safe management of these substances. This in turn leads to stockpiling of waste and increases the potential for illegal disposal through inclusion in non-hazardous waste collections, or through fly-tipping. Any generator or holder of hazardous waste has four main legal choices of service at present, depending on the scale and nature of the waste generated:

- Commercial hazardous waste collection (at source), mainly serving industrial and certain commercial customers, where waste is taken to a treatment facility in Ireland, is directly exported or is stored temporarily at an authorised transfer station.
- Civic amenity sites, designed to accept small quantities of waste from householders and, in limited circumstances, small business.
- Take-back schemes operated by producer responsibility initiatives, including collection of waste electrical and electronic equipment (WEEE), batteries/accumulators and end-of-life vehicles.
- Periodic drop-off services provided by local authorities or other organisations, e.g., one-off household hazardous waste collections.

The following waste streams are of concern due to under-developed collection infrastructure and require attention during the lifetime of this Plan.

### 5.1 Household hazardous waste

Common household wastes that could have hazardous properties include surplus cleaning chemicals & paints; garden chemical & pesticides, waste related to personal healthcare; and WEEE. Householders generate a wide variety of hazardous wastes though much of this is not widely recognised by the public as requiring special handling at end-of-life.

At a European level there is a focus on improving collection infrastructure by Member States. EU countries must establish, by 1 January 2025, separate collection of hazardous waste generated by households. In 2020 the European Commission issued Separate Collection of Household Hazardous Waste Guidance.<sup>8</sup>

#### MY WASTE

www.MyWaste.ie is Ireland's official guide to managing waste, providing information on managing waste responsibly and efficiently. The site provides information on local waste services, bring banks and recycling facilities along with ways to help prevent waste, reuse and upcycle.

In 2017-2019, a number of one-day household hazardous waste collection days were carried out by the regional waste authorities. Data from the 2018

---

<sup>8</sup> [https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52020XC1106\(01\)&rid=2](https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52020XC1106(01)&rid=2)

campaign showed that the amount of Household Hazardous Waste collected at 11 sites totalled 170 tonnes. The predominant waste stream was paint; however, much of this was water-based non-hazardous paint. All of this waste is managed as hazardous and is costly.

**TABLE 5.1: 2018 HOUSEHOLD HAZARDOUS WASTE COLLECTIONS: TOTAL VOLUMES.**

Waste stream	Collected (kg)	Waste stream	Collected (kg)
Paint	130,398	Aerosols	1,723
Oil containers	12,424	Cooking oil	1,175
Waste oil	8,053	Mixed fuel	1,094
Adhesives	4,825	Herbicides	930
Detergent	2,250	Lead batteries	526
Medicines	2,171	Anti-freeze	245
Pesticides	2,043	Batteries	140
Oil filters	1,940	Solid oily waste	60

In 2020, the regional waste management planning offices, with the support of the Department of the Environment, Climate and Communications, carried out a national study of the operation and sustainability of civic amenity site operations. A number of recommendations were made, with an overarching proposal on a need to develop an integrated and consolidated public waste infrastructure network that responds to consumer needs, regulatory and policy challenges and the Circular Economy challenge.

Improving collection of this waste stream reduces the risk to the environment and human health and also prevents other household wastes from becoming contaminated which could affect their future recycling potential. The latest waste characterisation study carried out by the EPA has shown an increase in hazardous household waste in the residual bin, which indicates a need for attention in this area.

The Waste Framework Directive requires the provision of separate collection of hazardous waste fractions produced by households by 2025. Meeting this requirement will require establishment of collections systems for household and small-scale hazardous waste through civic amenity sites and/or via special collections.

**Key recommendations:**

Prepare for separate collection of hazardous waste fractions produced by households by 2025, as required under Waste Framework Directive.

- *Carry out a review of waste licensing and permitting legislation to facilitate take-back, transport and temporary storage of certain hazardous wastes from small sources.*
- *Establish collection of household and small-scale hazardous waste through civic amenity sites and/or via special collections.*

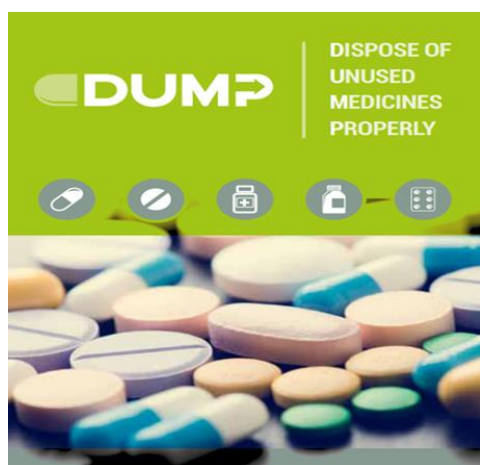
13. By 2023, establish collection platforms for surplus paint from household and commercial sources.

- *Build on current initiatives to initiate nationwide, large-scale collection(s), in collaboration with*

## 5.2 Surplus medicines

Unused & out-of-date medicines are often discarded into the household waste collection or flushed down the toilet. These methods of disposal can seriously harm the environment and human health, with products permeating the soil and entering the food chain and/or travelling into groundwaters and contaminating water supplies<sup>9</sup>. Everyday pharmaceuticals that are commonly found in the freshwater environment include antibiotics, painkillers and synthetic hormones.

EU Directive 2004/27/EC (Article 127b)<sup>40</sup> requires Member States to 'ensure that appropriate collection systems are in place for human medicinal products that are unused or have expired'. Ireland's Action Plan for Antimicrobial Resistance highlights the importance of avoiding putting medical waste in household waste and the need to improve collection of human and veterinary medicines.



The Disposal of Unused Medicines Properly (DUMP) initiative was developed by the Health Service Executive (HSE) in 2002 and encourages the public to return surplus or out-of-date medications to participating pharmacies, free of charge. During 2018, a DUMP project operated for a period of six weeks in the HSE's Cork/Kerry region with 250 participating pharmacies, during which time over 4,000 kg of surplus or out-of-date medicine was collected.

The EPA commissioned a study in tandem with this cycle of DUMP to characterise the wastes collected and consider the options and barriers for future management of this waste stream. Results from this showed that the waste comprised mostly medical waste, with small quantities of packaging and other materials. A high proportion of loose tablets and blister packages were present in each collection drum. Scaling-up the waste collected in the Cork/Kerry region to a national figure the report estimates that up to 29,000 kg of waste medicine is arising in Ireland every year.

Based on stakeholder consultations, the study found that pharmacists were favourably disposed towards a drug take-back scheme but voiced concern regarding the financing for such a scheme on a national ongoing basis. The study also carried out a desktop study of other countries' medical take back schemes with the objective of reviewing the operation of such schemes to determine if a

---

<sup>9</sup> Murray KE, Thomas SM, Bodour AA (2010) Prioritizing research for trace pollutants and emerging contaminants in the freshwater environment. *Environ Pollut* 58(12):3462–3471.

<sup>10</sup> [https://ec.europa.eu/health/sites/health/files/files/eudralex/vol-1/dir\\_2004\\_27/dir\\_2004\\_27\\_en.pdf](https://ec.europa.eu/health/sites/health/files/files/eudralex/vol-1/dir_2004_27/dir_2004_27_en.pdf)

similar scheme in Ireland could be considered. Overall, the DUMP study recommended that a producer responsibility initiative should be set up in Ireland to manage this waste stream.

**Key recommendation:**

By 2023, establish national collection of surplus and out-of-date medicines from household waste stream.

- *Develop a proposal with options, building on experience with DUMP project; EPA characterisation report; and stakeholder input.*
- *Implement a nationwide collection system.*

### 5.3 Farm hazardous waste

Farmers in Ireland generally use pesticides in the form of herbicides, insecticides and fungicides as part of their farming activities on crops and grassland, and disinfectant dairy hygiene products on their dairy herd. Empty pesticide and dairy hygiene containers are potentially hazardous wastes if not managed appropriately and can represent a management challenge for many farming enterprises. National agencies have collaborated in producing support guidance for farmers on how to manage these empty containers.

The farm hazardous waste<sup>11</sup> (FHW) pilot project operated a series of collection events for farmers from 2013 to 2017. It was a collaborative initiative led by the EPA, working with a cross-government team that included the (then) Department of Communications, Climate Action and Environment, Teagasc, the Department of Agriculture, Food and the Marine and local authorities. The initiative was also supported by the Irish Farmers' Association, Bord Bia and other stakeholders. It was funded through the NWPP, and the overall aim was to investigate the feasibility of, and the logistics and demand associated with, the operation of a collection scheme for the hazardous wastes associated with farming.

Forty-six one-day collection centres were operated, with over 9,000 farmers voluntarily participating in the collections and contributing financially towards the disposal costs. The average weight of hazardous waste presented per farmer was 81 kg of FHW and 34 kg of WEEE and batteries. During the campaign, over 1,000 tonnes of wastes was collected and properly managed, including:

- 68 tonnes of waste pesticides, including 1.7 tonnes of persistent organic pollutants
- 53 tonnes of veterinary medicine waste
- 481 tonnes of waste engine and hydraulic oil
- 54 tonnes of waste paint
- 46 tonnes of contaminated empty containers
- 28 tonnes of oil filters
- 313 tonnes of WEEE and batteries

---

<sup>11</sup> [http://www.epa.ie/pubs/reports/waste/haz/FHW2013\\_2017\\_Web.pdf](http://www.epa.ie/pubs/reports/waste/haz/FHW2013_2017_Web.pdf)

Significant quantities of highly toxic pollutants were presented for disposal at the centres, including chemicals such as dichlorodiphenyltrichloroethane (DDT), gamma-hexachlorocyclohexane (gamma-HCH or lindane), mercury, cyanide, agent orange and strychnine. The corroded condition of many of the legacy waste pesticide and veterinary medicine containers is a particular concern from a health, safety and environmental point of view. The quantity of packaging waste was significant, particularly that arising from the use of pesticides, veterinary medicines and engine oil.



The benefits that accrued to the State from the FHW collections include meeting the ambitions, targets and obligations set out in various national and international programmes and legislation, including the NHWMP; the Stockholm Convention on Persistent Organic Pollutants; the Water Framework Directive; and Food Wise 2025. The benefits to farmers include better health & safety on farms, improved environmental protection and compliance with obligations such as pesticide legislation, Bord Bia quality assurance schemes.

Estimations presented in the project final report suggested that 7,378 tonnes of hazardous wastes are currently stockpiled on farms (excluding WEEE and batteries). At a removal rate of approximately 200 tonnes per annum (i.e., if 10 collection centres were operated per year), it is estimated that it would take 36 years to clear this legacy waste.

The pilot project concluded that there needs to be increased focus on prevention and awareness of hazardous waste on farms. It strongly recommended that this action is underpinned by the establishment of a substantial nationwide FHW collection scheme. It also urged that consideration is given to introducing producer responsibility initiatives in the area.

#### Key recommendation:

By 2022, establish nationwide collection and transfer of farm hazardous wastes, including unused veterinary products.

- *Develop and launch suitable national collection scheme, having regard to findings from the 2013-2017 pilot scheme.*

#### Farm To Fork Strategy

The Farm to Fork Strategy is at the heart of the European Green Deal aiming to make food systems fair, healthy and environmentally friendly. As part of the strategy the commission is committed to reduce the overall use and risk of all chemical pesticides by 50%, as well as the use and risk of high-risk pesticides by 50%, by 2030. To obtain these reductions, the strategy pledges to revise the sustainable use of pesticides directive, enhance provisions on integrated pest management and promote greater use of safe alternative ways to protect harvests from pests and diseases

## 5.4 Asbestos

Up until 1999, asbestos was commonly used in building materials, mainly for insulation and fireproofing, and in some consumer goods. However, under the European Communities (Dangerous Substances and Preparations) (Marketing and Use) Regulations 2003<sup>12</sup>, it is now illegal to place asbestos or asbestos-containing products on the market.

All types of asbestos cause lung cancer, mesothelioma, cancer of the larynx and ovary, and asbestosis (fibrosis of the lungs). Exposure to asbestos occurs through inhalation of fibres. Asbestos waste is hazardous and must be disposed of properly. Before any demolition work, identify which waste facility is licensed by the EPA for disposal of asbestos waste.

The Health and Safety Authority have published Practical Guidelines on Asbestos-Containing Materials in workplaces<sup>13</sup>. It is difficult to estimate the amount of legacy asbestos waste however as this waste was widely used up to 1999, it is likely that there are still significant volumes of this waste. Asbestos is exported to Germany for disposal as there is no landfill in Ireland to deal with this problematic waste. This leads to high costs in managing this waste and there are concerns the volumes of asbestos managed each year is relatively low. The high costs associated with managing asbestos needs to be addressed so more of this hazardous waste can be captured and managed in an environmentally sound manner.

### Key recommendation:

Promote best practice in the management of commercial hazardous wastes streams.

- *Publish Smart Garage guide and promote responsible management of waste oils and other wastes from vehicle maintenance operations.*
- *Prepare and publish guidelines for the safe storage of Lithium-ion batteries at waste handling facilities.*
- *Produce best-practice guide for handling asbestos waste; and identify options for collection of asbestos and asbestos-contaminated wastes.*
- *Develop training to promote awareness on identification and proper management of hazardous fractions in C&D waste.*

## 5.5 Waste oils

Waste oils are hazardous waste as they display some hazardous properties. Waste oils that are found in rivers, lakes and streams threaten aquatic life. Indeed, a litre of waste oil can contaminate a million litres of water. Furthermore, severe soil contamination can result from waste oils being allowed to seep into the ground. Waste oils are governed by the European Union (Waste Directive)

---

<sup>12</sup> [https://www.citizensinformation.ie/en/environment/environmental\\_protection/asbestos\\_regulations.html](https://www.citizensinformation.ie/en/environment/environmental_protection/asbestos_regulations.html)

<sup>13</sup> [www.hsa.ie/eng/Publications\\_and\\_Forms/Publications/Chemical\\_and\\_Hazardous\\_Substances/asbestos\\_guidelines.pdf](http://www.hsa.ie/eng/Publications_and_Forms/Publications/Chemical_and_Hazardous_Substances/asbestos_guidelines.pdf)

Regulations 2020, which stipulates that Member States shall take the necessary measures to ensure that:

- (a) waste oils are collected separately, unless separate collection is not technically feasible taking into account good practices;
- (b) waste oils are treated, giving priority to regeneration or alternatively to other recycling operations delivering an equivalent or a better overall environmental outcome than regeneration;
- (c) waste oils of different characteristics are not mixed, and waste oils are not mixed with other kinds of waste or substances, if such mixing impedes their regeneration or another recycling operation delivering an equivalent or a better overall environmental outcome than regeneration.

Oil waste undergoes a significant level of recovery in Ireland at two facilities, whereby key quality criteria for the recovered product are met and the product is reused by, for example, the asphalt industry. Relatively small quantities of oil waste are exported. Oil is recovered from oily wastes including oils, oily sludge, oil filters and other aqueous wastes containing oils, primarily at the Enva facility in Portlaoise and Dublin. Both generate a product that is sold to be reused, primarily in the asphalt industry. The recovery of oil also generates an effluent that is treated and can be discharged to sewer.

It is important to collect as much as possible of this material, in order to avoid the contamination of the environment and also to realise the value in the high recovery potential of this waste stream. At present there is an active market for collection of waste oil in Ireland, though infrastructure and awareness need to improve for small-scale generators of waste oil such as farmers and smaller vehicle maintenance operations.

**Key recommendation:**

Promote best practice in the management of commercial hazardous wastes streams.

- *Publish Smart Garage guide and promote responsible management of waste oils and other wastes from vehicle maintenance operations.*
- *Prepare and publish guidelines for the safe storage of Lithium-ion batteries at waste handling facilities.*
- *Produce best-practice guide for handling asbestos waste; and identify options for collection of asbestos and asbestos-contaminated wastes.*
- *Develop training to promote awareness on identification and proper management of hazardous fractions in C&D waste.*

## 5.6 Solvents

The bulk of solvent waste is generated in the pharmachem sector, and facilities in this sector are largely subject to regulatory requirements, so waste generated in this sector is well managed. Solvent waste is typically treated offsite through blending for fuel use as “Liquid Recovered Fuel”. Over 80% of aqueous washing liquids and mother liquors treated offsite in Ireland are also blended



and exported for energy recovery. While this is considered treatment, the waste is still generally then exported for disposal. The Lagan Cement facility in Co Meath now accepts blended solvents for energy recovery, reducing use of fossil fuels on the site and aligning with the proximity principle.

**Key recommendation:**

Prevent hazardous waste in industrial sectors and support a safe circular economy.

- *Utilise the regulatory regime to encourage usage of less-toxic alternatives in production and processing steps.*
- *Review the environmental regulatory framework as a means to promote circularity in industrial processes and reduce industrial waste generation.*

## 5.7 Radioactive waste

Radioactive waste is outside the legally mandated scope of the NHWMP, however is noted that it was addressed in the previous plan; and furthermore, it is noted that the EPA is now the national competent authority and regulatory body for practices involving the use of radioactive sources. For these reasons, radioactive waste is addressed in this plan.

EPA-authorised users are required, as a prerequisite to their authorisation being issued, to have an agreement with the source supplier or manufacturer to take back sources ('take-back agreement') when they become disused. This policy was adopted with a view to minimising the amount of radioactive waste to be managed in Ireland once sources are no longer required. However, as radioactive sources had been in use or custody in Ireland for many decades prior to the adoption of this policy, there were a significant number of legacy sources that were of no further use, and those remained without a return or disposal route in Ireland.

Since 2010 Ireland has undertaken a significant source inventory reduction programme which has substantially reduced the number of long-lived disused or orphan sources and has addressed the majority of the legacy source issues. Enhanced regulatory requirements including additional security measures for disused sources and take back agreements, which have been implemented since 2010, mean that the probability of any source currently under regulatory control falling into the disused or orphan categories is extremely low in the short to medium term.

Given the overall reduction in the number of disused sources, the low-risk nature of the remaining sources and the stringent regulatory controls, leaving these sources in place is appropriate at this time. Effective arrangements for the temporary management and storage of orphan sources, which may arise in the future, are essential. These would likely involve clear assignment of responsibility for temporary management and storage either to a state agency or to an outsourced contractor.

There has been a significant increase in the use of waste-to-energy facilities for municipal solid waste in Ireland. The Industrial Emissions Directive and the corresponding Irish Regulations require such incineration/thermal recovery facilities to have portal monitoring systems to detect the presence of radioactive material. Since early 2020 radiation monitoring portal monitoring systems have been operational at the two waste-to-energy facilities in Ireland. Experience to date suggests that the majority of activations result from short-lived isotopes of medical origin, which decay while stored. However,



there have been some detections of long-lived isotopes and there is potential for more of these to arise in the future. This situation is closely monitored to establish if systems are indicating a significant volume of these orphan sources.

**Key recommendation:**

Put in place arrangements for temporary storage of orphan radioactive sources.

- *Identify options for the temporary safe and secure storage of orphan radioactive wastes, pending disposal.*

## 5.8 Waste from electrical and electronic equipment and batteries

Many everyday consumer items are electrical and electronic equipment (EEE), such as mobile phones, computers, drills, hairdryers, as well as industrial items such as medical devices, and laboratory equipment. When these items reach their end of life, they are defined as waste electrical and electronic equipment (WEEE). Lots of electronic goods contain hazardous materials such as heavy metals or batteries. These materials can cause serious environmental damage and are dangerous to human health. There is a system in place in Ireland to help recycle these products. Recycling rather than dumping means valuable components can be used again in new products and there will be less mining of raw materials.

WEEE is one of the fastest growing waste streams in the developed world. Up to recently, a lot of WEEE was thrown into the bin and disposed of in landfill. Improved regulation of the collection, recycling and disposal of WEEE has been law at European level (WEEE Directive) and brought into Irish law (WEEE Regulations) since 2005. New Irish WEEE regulations were published in March 2014, to implement changes that were introduced in Europe in the second WEEE Directive.

An increasing number of items are powered by batteries which can contain heavy metals (mercury, cadmium, lead), which are the main cause for environmental concern. If waste batteries are not disposed of correctly, heavy metals may leak when the battery corrodes, and so contribute to soil and water pollution and endanger human health. Due to the hazardous nature of batteries, separate legislation for the management of waste batteries was transposed into Irish law in 2008. The battery regulations apply to all types of batteries, including portable, industrial and automotive.

## 5.9 Contaminated Soils

Contaminated soils come from old industrial sites such as gas works, mines, tanneries, dock yards, petrol stations, etc. which are often contaminated with hazardous chemicals. Contaminated soils must be removed before the site can be used again. Due to the nature of this material, one-off projects can lead to significant volumes of this hazardous waste stream arising sporadically.

When sites licensed by the EPA are closed, they generally require aftercare to remove any residual contamination, according to the closure, restoration and aftercare requirements laid out in

individual licences. The EPA has published guidance on the management of contaminated land and groundwater at EPA licensed sites<sup>14</sup>.

There is potential for volumes of this hazardous waste to increase as brownfield/ industrial sites are redeveloped in line with urban densification strategies. Contaminated land or buried hazardous wastes may be encountered in the soil and groundwater, particularly in urban areas where there have been historic industrial uses.

Within Ireland, there is no dedicated hazardous waste landfill and there is limited capacity in other available infrastructure. Just one landfill has the ability to process mildly contaminated inert materials. This has implications for the management and treatment of contaminated soils. Some contaminated soil is treated at licensed facilities in Ireland to non-hazardous status. However, the trend is showing increased volumes of contaminated soil being exported, which is a costly solution that is contrary to the proximity principle, and also represents a net loss of the Irish soil resource.

**Key recommendation:**

Remediate identified legacy waste disposal sites containing hazardous waste.

- *Continued remediation of sites, in line with EPA Code of Practice and appropriate authorisations.*

## 5.10 Difficult wastes

The term “difficult wastes” is commonly used to refer to wastes that by their nature and physical properties pose problems for disposal and require special management to avoid nuisance and pollution or where physical properties of the wastes create serious handling problems. Wastes can also be considered difficult if there is no available treatment technology to allow it to meet waste acceptance criteria limits or if the technology has not yet been commercially proven. Difficult wastes may or may not be hazardous; and include:

- Out of date ordnance and marine flares.
- Non-resaleable seized/confiscated controlled substances.
- Ship & cargo wastes.
- Noxious weeds.

In 2010, a study was carried out to examine management options for the difficult wastes and found that in most cases, they do not require management via a hazardous waste facility. There remains nonetheless a need to carefully monitor and control the movement of these wastes.

---

<sup>14</sup> <https://www.epa.ie/pubs/advice/waste/contaminatedland/>

## 6. Hazardous Waste Treatment

Hazardous waste, due to its complex nature often requires specific and specialist waste treatment processes. Ireland frequently relies on treatment infrastructure outside of the state to deal with relatively small volumes of complex hazardous wastes. This chapter provides an overview of the issues and options pertaining to the treatment of hazardous wastes generated in Ireland.

### 6.1 Proximity principle

The proximity principle is well recognised in waste management and directs that as a general rule, waste should be dealt with as near to the place of production as possible. There is currently no commercial hazardous waste landfill or hazardous waste incinerator in Ireland and no facility for storage of radioactive waste. This lack of infrastructure is a risk due to the consequent reliance on export markets for the disposal of wastes arising through the normal functioning of Ireland's economy and society. Waste exports also represent lost resource and expenditure to the state.

Most of Ireland's hazardous waste (65%) is exported for treatment in other European countries. A significant proportion of this is exported for thermal treatment at large scale treatment facilities in countries such as the Netherlands, Belgium, Germany and France. The most commonly utilised thermal treatment processes include pyrolysis, thermal desorption, and incineration.

This plan recognises that complete self-sufficiency in terms of hazardous waste is not feasible for a relatively small island. However there is clearly a need for Ireland to take responsibility for the hazardous wastes produced within the economy and to take reasonable steps to provide appropriate treatment capacity. This will bring an additional benefit of raising awareness of waste impacts and encouraging ownership of the issue at local and regional level.

Three overarching strategic issues related to increasing self-sufficiency need to be addressed if additional hazardous waste is to be treated in Ireland and export reduced:

- Addressing the deficit in capacity for the substantial waste stream currently exported for thermal treatment (i.e. co-incineration, use as fuel or incineration);
- Development of landfill capacity to manage non-recoverable and non-combustible hazardous wastes and residues, including asbestos; and
- Expansion of other recovery and treatment capacity in Ireland for waste that does not need thermal treatment or landfill – generally referred to as physico-chemical treatment.

#### Key recommendation:

Strengthen systemic resilience for management of hazardous waste.

- *Commission a review of hazardous waste management during the COVID-19 pandemic.*
- *Conduct a business continuity assessment for Ireland's hazardous waste management system to identify at-risk waste streams and associated infrastructure.*

9. Strengthen knowledge of national hazardous waste capacity to inform infrastructure development and contingency planning, in accordance with application of the proximity principle.

- *Update & maintain inventory of national capacity for storage, treatment and disposal of hazardous wastes.*
- *Examine legislation and procedures for development of waste management infrastructure, as stated in the Waste Action Plan for a Circular Economy.*

## 6.2 Treatment Processes

As noted previously, Ireland does not have the facilities, or economies of scale, required to treat the full range of hazardous wastes it produces. The three main offsite treatment processes in Ireland are the recovery of oil, the blending of solvents (and other compatible materials) and the physico-chemical treatment of waste to generate effluent that can be discharged to sewer and solid filter cake than can be landfilled. The following sections outline the various approaches available to safely treat hazardous substances within a tightly regulated waste management operation.

### *Landfill*

Landfills for the management of non-recoverable residual hazardous waste have been developed in numerous jurisdictions across Europe. Given the nature of the waste deposited in hazardous waste landfill robust design and operational measures are required to protect human health and the environment. As disposal is the least preferred waste management option under the waste hierarchy all other waste recovery options should be considered prior to the disposal of waste at landfill. At the time of writing no landfill for the management of residual hazardous wastes has been authorised or developed in Ireland.

### *Solvent Recovery*

As with waste oils, subject to compliance with applicable regulatory controls there are two primary strategies for the management of solvent waste; energetic recovery whereby the solvent is blended into a recovered fuel product which is used in a number of applications including cement kilns and, solvent recovery using a pre-treatment and fractional distillation process which produces a recovered solvent product which can be subsequently reused in industrial processes<sup>15</sup>. Both of these recovery processes are available at authorised waste management facilities in Ireland, the recovered solvent from these processes is utilised in Irish cement kilns and industrial applications.

### *Waste Oil Recovery*

Waste lubricating oils constitute the largest single non-aqueous liquid hazardous waste stream in Europe<sup>16</sup>. Subject to compliance with applicable regulatory controls there are two approaches which can be taken to the recovery and re-use of waste oils; energetic recovery through blending of the waste oils into a recoverable fuel product which is used in lieu of virgin fuels and, re-refining where this valuable resource undergoes pre-processing, vacuum distillation and hydro treating to yield a

---

<sup>15</sup> EPA (2010) Final Report – Economic Study of Solvent Recycling and Treatment. Available at: <https://www.epa.ie/pubs/reports/waste/haz/Solvents%20Economic%20Study%20Report.pdf> (Accessed 15 March 2021).

<sup>16</sup> GEIR Re-refining (2016) Waste Framework Directive revision: European waste oil re-refining industry position. Available at: [https://www.geir-rerefining.org/wp-content/uploads/GEIRpositionpaperWFD\\_2016\\_FINAL.pdf](https://www.geir-rerefining.org/wp-content/uploads/GEIRpositionpaperWFD_2016_FINAL.pdf)

base oil which is used in the formulation of lubricating oils. There is no known limit to the number of times a waste oil can be re-refined.<sup>17</sup> In Ireland, a number of appropriately authorised operators produce recovered fuel oil products from waste oil.

### *Pyrolysis*

A process which sees organic materials transformed in low oxygen conditions into combustible gaseous components and a solid residue containing inorganic substances<sup>18</sup>. Operating at temperatures ranging from 400° to 1150°C pyrolysis can treat a range of organic wastes including polychlorinated biphenyls (PCBs), halogenated and non-halogenated wastes and hydrocarbon contaminated wastes. Pyrolysis is not a suitable technology for wastes consisting primarily of inorganic substances. The pyrolysis off-gases are commonly incinerated in a high temperature afterburner at temperatures ranging from 1000° to 1400° Celsius with effluent gases from the combustion process treated prior to discharge to the atmosphere. The solid treatment residues may contain inorganic and metal contamination which require further treatment prior to final disposal or recovery. The heat from the combustion of the off-gases is recovered back into the pyrolysis process. Pyrolysis treatment is not currently used in Ireland to treat hazardous waste.

### *Thermal Desorption*

A process widely used for the treatment of solids such as soil, sludges or filter cake containing volatile contaminants. Indirect heat in the range of 350-650°C is applied to the waste resulting in the volatilisation of contaminants. The off-gases are treated in a similar manner to the off-gases from the pyrolysis process. Higher temperatures may be required for specific contaminants. The solid treatment residue may contain residual inorganic contamination which requires further treatment prior to treatment and recovery. The heat from the combustion of the volatile gasses is recycled back into the process. Thermal desorption is used in the UK, the Netherlands, Finland, Belgium and Germany and may be suitable for use in Ireland due to the availability of mobile treatment systems.

### *Incineration*

A commonly used waste treatment technology which sees the combustion of hazardous waste in a controlled environment at temperatures of up to 1200° Celsius. Incineration results in the thermal destruction of a wide range of hazardous substances in pharmaceutical and industrial wastes including dioxins, furans, PCBs, Per- and polyfluoroalkyl substances (PFAS). In Ireland hazardous solvent waste is treated at on-site incinerators in the pharma-chem sector. The Indaver incinerator (W0167-02) is licensed to accept 10,000t of hazardous waste. The incineration of hazardous waste generates treatment residues which must be subsequently managed to protect human health and the environment, these include Incinerator Bottom Ash (IBA), flue gases and air pollution control residues (APCR).

---

<sup>17</sup> Safety Kleen (2021) Oil Re-refining. Available at: [https://www.geir-rerefining.org/wp-content/uploads/GEIRpositionpaperWFD\\_2016\\_FINAL.pdf](https://www.geir-rerefining.org/wp-content/uploads/GEIRpositionpaperWFD_2016_FINAL.pdf)

<sup>18</sup> Czajczynska, D. et al. (2017) Potential of pyrolysis processes in the waste management sector. Thermal Science and Engineering Processes. Vol. 3, pp. 171-197.

### *Other Established Processes for treatment of hazardous waste:*

#### ➤ Physico-chemical Treatment

Physico-chemical treatment technologies including gravity-based separation, neutralisation, oxidation, reduction and immobilisation can treat industrial waste waters, acids and bases, cyanides, chromates and heavy metal contamination.

#### ➤ Biological treatment/bioremediation

This treatment removes contaminants from contaminated soil. It involves using bacteria to break down substances in the soil. There has been an increase in the amount of contaminated soil generated and treated in Ireland in recent years.

#### ➤ Advanced Oxidation

Ultraviolet (UV) radiation and oxidation is used to destruct complex organic species in aqueous waste rendering these species treatable by biological means. Advance oxidation has potential applications in the pharmaceutical, chemical and medical device industries as the technology can be used to treat the high water content aqueous organic wastes commonly generated by these industries.

#### ➤ Alkaline Hydrolysis

A metal hydroxide-based solution reacts with bio-hazardous wastes to break down the major constituent of cells and tissues. Alkaline hydrolysis at elevated temperature destroys pathogenic agents. This technology would be a potential small-scale solution for the treatment of infectious human and/or animal tissue of which 600-700 tonnes is exported for treatment per annum.

#### ➤ Plasma Gasification

A technology which converts carbon-containing materials to synthesis gas (syngas) which can be used to generate power. Inorganic materials in the waste are not broken down but melt and when cooled form a chemically-inert, non-hazardous slag. Plasma gasification may be a suitable technology for the treatment of air pollution control residues from Ireland's waste to energy facilities however, the technology is expensive, and its use is dependent on it becoming available, and financially viable at a commercial scale in Europe.

#### ➤ Alternative Advanced Waste Treatment Technologies

A range of potential advanced waste management technologies have been investigated, trialed and developed however the commercial implementation of these technologies is often limited by a requirement for further research and development and/or scale-up to meet commercial demands. The implementation of advanced treatment technology is further limited by deployment costs or insufficient waste volumes which render the technology not presently economically viable. Advanced treatment technologies that may see greater use in future are listed below:

- Molten Salt Oxidisation
- Gas Phase Chemical Reduction (GPCR)
- Catalytic Dechlorination
- Base Catalysed Dechlorination
- Vitrification
- Ball Milling

- Molten Metal Treatment
- Solvated Electron Treatment
- Supercritical Water Oxidation
- Steam Detoxification

## 7. Policy & Regulation

The chapter provides the policy and legislative context to the NHWMP. The Circular Economy concept is the overarching framework driving developments in this area at EU and national level. A circular economy is built on optimising material cycles, specifically: a) how we use, re-use and dispose of materials; and b) how we minimise waste to make the most of resources in that process. Risks to humans or the environment should be avoided along the entire life cycle of a product, so the use of hazardous chemicals in products should be reduced and residual hazardous wastes must be identified and appropriately managed.

Environmental and enterprise policy are both pertinent to hazardous waste management, recognising that substances with hazardous properties are widely used throughout our economy. This is particularly true in the context of 'green' economic recovery and growth strategies. Given the risks to human health and the environment posed by inappropriate management of hazardous waste, these policy developments are underpinned by a substantial and evolving canon of legislation.

### 7.1 Policy context

In 2020, The Department of Environment launched a new national waste policy, Waste Action Plan for a Circular Economy. A key aspect of this policy document is the move from waste treatment (how products and materials are treated at end of life) to product design for circular economy. Reducing hazardous materials in products along with design to encourage reuse, ease of repair and ultimately recyclability at end of life are central to a circular economy. The Waste Action Plan also commits to examining the feasibility of introducing Extended Producer Responsibility (EPR) schemes for paints, medicines and farm hazardous waste. EPR is an environmental policy approach in which a producer's responsibility for a product is extended to the postconsumer stage of the product's life-cycle. Under an EPR model, producers take over the responsibility (financial and/or organisational) for collecting or taking back used goods and for sorting and treating their eventual recycling.

#### *European Green Deal*

The European Green Deal is an EU-wide plan to make the EU's economy sustainable by moving to a clean, circular economy that will boost the efficient use of resources and cut pollution. The plan proposes that chemicals are used more safely and sustainably in industrial settings including consideration and management of hazardous wastes arising from manufacture and use of products. It covers all sectors of the economy, notably transport, energy, agriculture, buildings, along with industries such as cement, ICT, textiles & chemicals.

#### *8th European Environment Action Programme*

The European Commission has tabled a proposal on a new Environment Action Programme (EAP) to 2030. This new 10-year programme keeps the 2050 vision from the 7th EAP and reinforces it by aiming to accelerate the EU transition to a climate-neutral, resource-efficient clean and circular economy in a just and inclusive way, fully endorsing the environmental and climate objectives of the European Green Deal. The 8th EAP also provides a basis for the achievement of the environmental objectives of the UN Agenda 2030 and its 17 Sustainable Development Goals. The 8th Environment Action Programme (8th EAP) sets six thematic priority objectives including "*pursuing a zero-pollution*



*ambition for a toxic free-environment, including for air, water and soil and protecting the health and well-being of citizens from environment-related risks and impacts".* This will be achieved by linking key EU Green Deal ambitions such as realisation of those relating to Zero Pollution and the Circular Economy while also developing new Zero Pollution monitoring frameworks to determine progress towards these goals.

### *EU Chemicals Strategy for Sustainability Towards a Toxic-Free Environment*

The EU Green Deal (EGD) strongly advances a cross-cutting integrated approach to policy development. Consistent with the 8th EAP, one key EGD aim is a "Zero Pollution Ambition for a Toxic-free Environment" which is closely related to and coherent with other objectives such as "Preserving and restoring ecosystems and biodiversity" and "From Farm-to-Fork: designing a fair, healthy and environmentally-friendly food system". The EGD initiative includes the development of the Chemicals Strategy for Sustainability (published in October 2020) which sets out a roadmap for delivery of a non-toxic future with 'safe-by-design' chemicals contributing to a healthy and sustainable economy and society. Where use of hazardous substances is deemed essential then such use is to be strictly controlled and regulated with a view to eventual substitution. The strategy also proposes a toxic-free hierarchy, similar to the waste hierarchy (see Figure 3 below).

#### Key recommendation:

Ensure a coordinated national approach on hazardous waste in the context of the Circular Economy, with focus on prevention.

- *Incorporate prevention & management of hazardous waste into the national Circular Economy Programme.*
- *Incorporation of relevant NHWMP objectives in national waste management planning.*
- *Support HSA-led implementation of the EU Chemicals Strategy for Sustainability Towards a Toxic-Free Environment as it relates to hazardous waste management.*

## 7.2 International Regulatory Environment

From a legislative point of view, waste is classified as being hazardous when it displays one or more of the properties listed in Annex III of Commission Regulation (EU) No. 1357/2014 (see Appendix A). Commission Regulation (EU) No. 1357/2014 replaced Annex III to Directive 2008/98/EC of the European Parliament and of the Council on waste, which had previously listed the properties of hazardous waste.

### *Waste Framework Directive*

Waste management at EU level is regulated by the Waste Framework Directive (2008/98/EC). The Directive lays down measures to protect the environment and human health by preventing or reducing the adverse impacts due to the generation and management of waste. Waste management must be carried out without risk to water, air, soil, plants or animals; without causing a nuisance through noise or odours; and without adversely affecting the countryside or places of special interest.

The Directive contains special conditions in relation to hazardous waste, waste oils and biowaste. Hazardous waste requirements under the Directive include the establishment, revision and

reviewing of hazardous waste management plans, inspections of hazardous waste facilities, record keeping, hazardous waste classification, banning of the mixing of hazardous waste, and packaging and labelling requirements.

The legislation does not cover certain types of waste such as radioactive elements, decommissioned explosives, faecal matter, waste waters and animal carcasses.

Other key issues of relevance addressed in the Directive include:

- Polluter Pays Principle – the original waste producer must pay for the costs of waste management.
- Extended producer responsibility – Member States have powers to introduce new producer responsibility measures to increase levels of recycling, reuse and waste prevention.
- Waste management plans and waste prevention plans – waste prevention plans were required to be drawn up by 12 December 2013.
- Energy recovery – energy-efficient incineration facilities dedicated to the processing of municipal solid waste will be able to be classed as ‘recovery’ rather than ‘disposal’ operations, moving them up the waste hierarchy.
- End of waste criteria – by which a material that is recovered or recycled from waste can be deemed to be no longer a waste.
- By-products – the Directive provides clearer distinction between by-products and waste and sets out conditions to be met for which material can be deemed to be a by-product.
- Amends the European Waste Catalogue, which is now referred to as the List of Waste.

### *Amendment to the EU Waste Framework Directive, 2018*

In response to the challenges faced regarding the sustainable use of resources linking issues such as the extraction of raw materials, the production and use of products and how we handle waste, the EU signed up to a Circular Economy (CE) Package in December 2015. This package is also an important element of the European Green Deal. The policies and legislative proposals contained in the CE Package are designed to aid the transition towards a circular economy and provide the legal framework to enable the circular economy.

The concept of a circular economy is one in which materials are used sustainably, resources are conserved, and waste is managed in such a way as to promote secondary raw materials and recycling while ensuring minimal environmental and human health impacts through the use of products and materials. The CE Package involved four adopted directives on waste, landfill waste, end of life for vehicles, and batteries and packaging waste.

As part of the EU’s circular Economy Action Plan, The Waste Framework Directive was amended in 2018 by Amending Directive (EU) 2018/851 and transposed into Irish legislation under S.I. no. 323 of 2020 (European Union (Waste Directive) Regulations 2020). The new Directive places responsibility on EU Member States to improve their waste management systems, to improve the efficiency of resource use, and to ensure that waste is valued as a resource.

Some of the key issues addressed in the Amending Directive are as follows.

- Minimum operating requirements for extended producer-responsibility schemes including fee modulation. These can also include organisational responsibility and a responsibility to contribute to waste prevention and to the reusability and recyclability of products.
- Strengthened rules on waste prevention. On waste generation, EU countries must take measures to:
  - support sustainable production and consumption models;
  - encourage the design, manufacturing and use of products that are resource efficient, durable, repairable, reusable and capable of being upgraded;
  - target products containing critical raw materials to prevent those materials becoming waste;
  - encourage the availability of spare parts, instruction manuals, technical information, or other means enabling the repair and reuse of products without compromising their quality and safety;
  - promote the reduction of the content of hazardous substances in materials and products;
  - stop the generation of marine litter.
- Sets new municipal-waste-recycling targets. By 2025, at least 55% of municipal waste by weight will have to be recycled. This target will rise to 60% by 2030 and 65% by 2035.
- In relation to hazardous waste and biowaste:
  - EU countries must establish, by 1 January 2025, separate collection of textiles and hazardous waste generated by households; and ensure that, by 31 December 2023, biowaste is collected separately or recycled at source (for example, by composting).
  - Tasks the European Chemicals Agency (ECHA) with developing a database with information on articles containing substances of very high concern (SVHCs) on the Candidate List. New substances are regularly added to the Candidate List under the Registration, Evaluation, Authorisation and Restriction (REACH) Regulation (Regulation (EC) 1907/2006). Companies that produce, import or supply articles containing Candidate List substances have to submit information on these articles placed on the EU market to the Substances of Concern in Articles, as such or in complex objects (Products), named the SCIP database from 5 January 2021. The SCIP database has three main objectives:
    - Decrease the generation of waste containing hazardous substances by supporting the substitution of substances of concern in articles placed on the EU market.
    - Make information available to further improve waste treatment operations.
    - Allow authorities to monitor the use of substances of concern in articles and initiate appropriate actions over the whole life cycle of articles, including at their waste stage.
- Highlights examples of incentives to apply the waste hierarchy, such as landfill and incineration charges and pay-as-you-throw schemes.

### *Basel Convention*

The Basel Convention on the Control of Transboundary Movements of Hazardous Wastes & their Disposal regulates the transboundary movements of hazardous wastes and other wastes and obliges

its parties to ensure that such wastes are managed and disposed of in an environmentally sound manner. The overarching objective of the Basel Convention is to protect human health and the environment against the adverse effects of hazardous wastes. The provisions of the Convention focus on the following principal aims:

- the reduction of hazardous waste generation and the promotion of environmentally sound management of hazardous wastes, wherever the place of disposal;
- the restriction of transboundary movement of hazardous wastes except where it is perceived to be in accordance with the principles of environmentally sound management;
- a regulatory system applying to cases where transboundary movements are permissible.

In 1995, Decision III/1 (the export ban amendment) was adopted prohibiting transboundary movements of hazardous wastes from parties listed in Annex VII of the Basel Convention to all other countries (Annex VII includes all OECD member countries, the EU and Liechtenstein). The Basel Convention's export ban amendment entered into force on 5 December 2019.

Regulation (EC) No. 1013/2006 of the European Parliament and of the Council of 14 June 2006 on shipments of waste (also referred to as the Transfrontier Shipment (TFS) Regulation) and its amendments address the requirements of the Basel Convention. In Ireland the Waste Management (Shipments of Waste) Regulations 2007 (S.I. No. 419 of 2007) and amendments address the administrative provisions to implement the EU TFS Regulation.

The National TFS Office (NTFSO) at Dublin City Council was established as the National Competent Authority for the export, import and transit of waste shipments under S.I. No. 419 of 2007. All transfrontier shipments of waste originating in any local authority area in the State that are subject to the prior written notification procedures must be notified to and through this office. The NTFSO is responsible for the supervision and control of waste shipments into and out of the state including the processing, assessment and monitoring of all waste shipment applications, pre-notifications and movements of waste being exported and imported. Responsibility for the enforcement of the TFS regulations, the education of stakeholders, and collaboration and co-ordination with the business community and external agencies lies with the NTFSO.

### *Brexit*

Under the Withdrawal Agreement, the Protocol on Ireland/Northern Ireland (IE/Ni Protocol) came into effect on 31 December 2020. From a Waste Shipment Regulation perspective, Northern Ireland is treated as if it were a member state while Great Britain (England, Scotland & Wales) will be treated as a third country.

Any waste travelling to or from Ireland to Northern Ireland or Great Britain for recovery will not be affected from a TFS perspective. However, under UK policy, waste is not permitted to travel

between Ireland and Great Britain for disposal. There is an exemption in place for shipments of hazardous waste for D5, D9 and D10<sup>19</sup> disposal operations between Ireland and Northern Ireland.

The Revenue Commissioners has produced a guidance document<sup>20</sup> to assist exporters with sending goods (which would include waste) from the EU to Third Countries. As Northern Ireland will be treated as if it were a Member State, there will be no additional Customs requirements for waste shipments between Ireland and Northern Ireland. However, for waste shipments between Ireland and Great Britain, exporters should consult the Revenue Commissioners guidance document.

### 7.3 National legislation

Waste Directives are implemented in Ireland by the Environmental Protection Agency Act 1992, the Waste Management Act 1996 as amended and, and the Protection of the Environment Act 2003. Several statutory instruments deal with specific aspects of EU Directives.

The Waste Management Act 1996, as amended, provides the legislative framework for waste and hazardous waste management in Ireland. The Waste Management Act 1996 and associated amendments has been to consolidate all acts and statutory instruments up to 14 April 2020.

The transposition of EU waste directives is enacted for the most part through enabling provisions included within the Act. The Environmental Protection Agency Act 1992 provides the framework for several other EPA functions, including the issuing of licences for certain industrial activities.

A comprehensive list of the legislation governing the production and management of hazardous waste in Ireland is provided in Appendix B A list of national waste management legislation is provided in Appendix 2.

### 7.4 Classification of hazardous waste

The correct classification of waste is the foundation for ensuring that the collection, transportation, storage and treatment of waste is carried out in a manner that provides protection for the environment and human health and in compliance with legal requirements.<sup>21</sup> Waste producers are required to classify their waste as either hazardous or non-hazardous. Upon completion of the classification the correct List of Waste (LOW) code must be assigned to the waste. The classification

---

<sup>19</sup> <https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2008:312:0003:0030:en:PDF>

<sup>20</sup> (<https://www.revenue.ie/en/customs-traders-and-agents/documents/export-procedures-guide.pdf>)

<sup>21</sup> EPA, 2018, Waste Classification – List of Waste and determining if a waste is hazardous or non-hazardous – <https://www.epa.ie/pubs/reports/waste/stats/wasteclassification/2019%20%20FULL%20template.pdf>

of waste is a multi-stage process: the EPA has developed a methodology and template for the identification and assessment of a waste's hazardous properties (HPs) and assigning the appropriate LOW Code to the waste.<sup>22</sup> The waste classification system applies across the European Union and is the basis for all national and international waste reporting obligations. The EPA waste classification methodology and template provides waste producers with a multi-stage waste classification process based on up-to-date standards and information. Waste classification is based on:

1. Commission Decision of 18 December 2014, amending Decision 2000/532/EC on the list of waste pursuant to Directive 2008/98/EC of the European Parliament and of the Council (2014/955/EEC) [referred to hereafter as 'The List of Waste (LoW)'].
2. Commission Regulation (EU) No. 1357/2014 of 18 December 2014, replacing Annex III to Directive 2008/98/EC of the European Parliament and of the Council on waste and repealing certain Directives.
3. Council Regulation (EU) 2017/997 of 8 June 2017 amending Annex 111 to Directive 2008/98/EC of the European Parliament and of the Council as regards the hazardous property HP 14 'Ecotoxic'.

The List of Waste approach provides a harmonised, non-exhaustive list for coding of waste across the European Union. The different types of waste are fully defined by a six-digit LOW code reflecting either the origin or the waste from a particular sector or the type of waste. The LOW is subdivided into 20 chapters, which must be used in the following order of precedence: Ch. 1–12 & 17–20 followed by Ch. 13–15 and finally, if no other suitable code can be identified, Ch. 16. The LOW contains three LOW code entry types:

- Non-hazardous.
- Hazardous (marked with an asterisk).
- Mirror—waste that may be either hazardous or non-hazardous, referred to as 'mirror' hazardous and 'mirror' non-hazardous entries.

Without prejudice to the provisions of Article 7 of Directive 2008/98/EC (as amended), if a waste has a non-hazardous entry it is non-hazardous without further assessment. If a waste has a hazardous entry, it is hazardous without further assessment. The following example illustrates how mirror entries are presented:

- 17 05 03\*      soil and stone containing hazardous substances
- 17 05 04      soil and stone other than those mentioned in 17 05 03.

If the waste has a mirror entry, i.e., hazardous and non-hazardous entries for the same waste type as illustrated above, it must be subject to further assessment to determine whether it displays any of the hazard properties HP1–HP15 and/or contains POPs above the specified concentration limits. If the waste is found to exhibit hazardous properties or contain POPs above the specified concentration limits it will therefore be classified as a hazardous waste.

---

<sup>22</sup> Available for download at <https://www.epa.ie/waste/municipal/wasteclass/>

POPs are substances that persist in the environment, bioaccumulate through the food web and present a risk or cause adverse effects to human health and the environment.<sup>23</sup> The Stockholm Convention on POPs is an international treaty that aims to protect human health and the environment from the deleterious effects of POPs. It entered into force for Ireland in 2010. POPs are regulated under S.I. No. 146/2020 – European Union (Persistent Organic Pollutant) Regulations 2020.

## 7.5 Enforcement of hazardous waste legislation

The effective enforcement of hazardous waste legislation is essential to protect human health and the environment, to address specific problems, such as unauthorised disposal of hazardous waste and the management of priority waste streams, to implement policy objectives, to ensure a level playing field within the regulated waste sector, to maintain the integrity of the regulatory system and to create a deterrent effect. The key actors on hazardous waste enforcement are:

- Department of the Environment, Climate & Communications
- Environmental Protection Agency
- Local Authorities
- National Waste Collection Permit Office
- Producer Responsibility Organisations
- National Transfrontier Shipment Office

### *Department of the Environment, Climate & Communications*

DECC is responsible for developing the policy and legislative framework for waste management in Ireland. The department also establishes working groups and other initiatives to target specific hazardous waste issues and acts to transfer international policy developments to the national system.

### *Environmental Protection Agency*

The Environmental Protection Agency promotes and co-ordinates the National Hazardous Waste Management Plan's implementation, and will continue to take responsibility for:

- Chairing the National Waste Prevention Committee with oversight of the Plan's implementation.
- Fulfilling specific implementation roles as identified in the Plan; and
- Monitoring and reporting on the Plan's implementation.

The EPA carries out its waste enforcement functions through the Office of Environmental Enforcement (OEE). The EPA is mandated to deliver improved environmental compliance through enforcement of licences issued to waste, industrial and other activities.

---

<sup>23</sup> Environmental Protection Agency (EPA) (2020) Persistent Organic Pollutants (POPs) & the Stockholm Convention. Available at: <https://www.epa.ie/waste/hazardous/pops/> (Accessed 31 August 2020).



The EPA fulfils a supervisory role in respect of the environmental protection activities of Local Authorities and serves as a resource to members of the public who have exhausted other avenues of complaint. Further enforcement responsibility is assigned to the OEE, including producer responsibility enforcement related to WEEE, batteries and tyres. The OEE also co-ordinates the activities of the Network for Ireland's Environmental Compliance and Enforcement (NIECE) – see below.

### *Local Authorities / WERLAs*

The primary waste enforcement objective of local authorities is to achieve regulatory compliance in relation to waste activities in the Local Authority's functional area. LAs are empowered under the Waste Management Act to tackle illegal waste activity. This includes the power to investigate complaints; prosecute offences; apply to the Courts for the imposition of fines; enter onto and inspect premises where there are reasonable grounds for believing that there is a risk of environmental pollution; direct a holder of waste to dispose of it in a certain way within a specific timeframe; and monitor and inspect waste holding, recovery and disposal facilities.

The LAs are assisted in their enforcement activities by the three regional WERLAs (Southern, Eastern and Midlands, and Connacht/Ulster), Cork County Council, Dublin City Council and Leitrim & Donegal County Councils (combined). The WERLAs co-ordinate the waste enforcement actions of local authorities, set priorities and common waste enforcement objectives, and ensure consistency of enforcement of waste legislation. While local authority personnel are the first to respond to specific breaches of waste legislation, the WERLAs facilitate streamlining of waste enforcement activities.

To identify emerging issues and challenges and to ensure that local authorities have input towards the process of identifying National Waste Priorities, each Region has its own network of Local Authority Groups, which include Regional Steering Groups, Regional Operations Groups and Regional Waste Enforcement Officer Groups.

### *National Waste Collection Permit Office*

The National Waste Collection Permit Office (NWCPO) processes waste collection permit applications and reviews applications for all LAs. It maintains the Waste Collection Permit register, revokes Waste Collection Permits as appropriate, and provides data reports to relevant stakeholders including enforcement authorities as required.

### *National Transfrontier Waste Shipment Office*

The National Transfrontier Waste Shipment Office (NTFSO) at Dublin City Council is designated as the National Competent Authority for the export, import and transit of waste shipments under S.I. No. 419 of 2007 Waste Management (Shipments of Waste) Regulations, 2007 which sets out the notification procedures, specifies revised waste listings and strengthens enforcement provisions in relation to waste movements within, into and out of the European Union. All transfrontier shipments of waste originating within the State that are subject to prior written notification procedures must be notified to and through the National TFS Office who have a dedicated enforcement team to enforce the provisions of Commission Regulation (EC) No. 1013/2006 on transfrontier shipments of waste.

The NTFSO is also responsible for the administration and enforcement of S.I. No. 324 of 2011, The European Communities (Shipments of Hazardous Waste exclusively within Ireland) Regulations 2011



which regulate the shipment and transfer of hazardous waste within the state setting out duties and responsibilities of waste producers, notifiers, carriers, waste holders and consignees in such matters.

The NTFSO's enforcement strategy with respect to the movement of hazardous waste is established in the NTFSO Waste Shipment Inspection Plan 2020 – 2022<sup>24</sup>.

### *Collaborative Arrangements*

The work of the WERLAs is overseen by the National Waste Enforcement Steering Committee (NWESC) and is co- chaired by the DECC and the EPA. The NWESC determines national waste enforcement priorities for the WERLAs and drives consistency at a central level. The Committee includes representatives from a wide range of regulatory authorities including.

- Environmental Protection Agency
- WERLAs
- An Garda Síochána
- National Transfrontier Shipment Office
- National Waste Collection Permit Office
- Department of Social Protection
- Regional Waste Management Planning Offices
- Office of Revenue Commissioners
- County and City Managers Association

The Committee supports the WERLAs in dealing with issues of serious waste crime. Each Region has its own network of Local Authority Groups. This assists to identify emerging issues and challenges and to ensure that Local Authorities have input into the process of identifying National Waste Priorities. The Local Authority Groups include Regional Steering Groups; Regional Operations Groups; and Regional Waste Enforcement Officer Groups.

The WERLAs work closely with the Waste Management Planning Lead Authorities to align enforcement activities with the requirements of the Regional Waste Management Plans and to align awareness programmes with the National Waste Priorities.

To ensure consistency in terms of enforcement across the local authority and EPA regulated waste sector, and continuously streamline the RMCEI process, the WERLAs and the EPA meet on a regular basis. The NIECE platform enables the WERLAs to liaise with local authorities continually, to facilitate information sharing, and hold a repository of guidance documents and enforcement tools developed by the WERLAs.

### *Other relevant enforcement bodies/processes*

The National Waste Enforcement Steering Committee, co-chaired by the DECC and the EPA, has created a network of statutory bodies with a link to waste crime which has facilitated more multiagency operations taking place on a regional basis, identifying, stopping, and prosecuting non-

---

<sup>24</sup> <https://www.dublincity.ie/residential/environment/national-tfs-office/waste-shipment-inspection-plan>

compliant activities in the waste sector. Waste enforcement continues to evolve, characterised by an increase in the use of technology, the sharing of best practice and intelligence led interventions.

The NIECE Network provides a forum which encourages individuals and organisations to work together to deliver improvements in priority environmental areas. The Network is structured around key thematic areas Waste, Water and Air/Climate and facilitates working groups under each of these thematic areas. The objectives of the Network are to:

- Link people and their work areas
- Share expertise and create learning opportunities.
- Enhance consistency.

Members of the NIECE Network include the Environmental Protection Agency; all local authorities; and relevant government departments. Other members include An Garda Síochána; The Police Service of Northern Ireland; Inland Fisheries Ireland; Health Service Executive; Revenue Commissioners and the Director of Public Prosecutions. Representatives from other sectors are invited to participate where relevant.

IMPEL is an informal network of European regulators and is open to organisations or authorities working in the public sector who implement and enforce environmental legislation. The network is a powerful tool for sharing experience and information on the practical application of environmental legislation across Europe. Co-operation among practitioners in the fields of inspections, permitting and enforcement under the IMPEL network started in 1992. IMPEL's members consist of fifty-five environmental authorities in thirty-six countries. IMPEL's activities are concerned with areas such as:

- Training of inspectors
- Minimum criteria for environmental inspections
- Exchange of information and experience on implementation and enforcement of EU environmental legislation
- Development of common views on the coherence and practicality of current EU legislation
- Commenting on practicality and enforceability of proposed EU legislation

Key recommendation:

2. Deliver strong and collaborative enforcement of hazardous waste legislation to ensure protection of human health and the environment.

- *Agree and implement annual enforcement priorities for the storage, movement and treatment of hazardous waste.*
- *Initiate an annual regulatory forum on legislative and regulatory developments, sharing best practice and emerging hazardous waste issues.*
- *Determine annual market surveillance priorities to prevent unauthorised use of hazardous chemicals in mixtures and products.*

## 7.6 Closed Landfills

A "closed landfill" is defined in the 2008 Regulations as a landfill site operated by a local authority for the recovery or disposal of waste without a waste licence on any date between 15/07/1977 and

27/03/1997 (i.e. prior to the entry into force of the Waste Management (Licensing) Regulations, 1997 (S.I. No. 133 of 1997)). "Closed landfills" are also commonly referred to as historic landfills.

The Environmental Protection Agency is obliged to process applications from local authorities in relation to "closed landfills" in accordance with the Waste Management (Certification of Historic Unlicensed Waste Disposal and Recovery Activity) Regulations, 2008.

Applications for a certificate of authorisation for closed landfills may only be made by local authorities. Risk Assessments are to be carried out in accordance with the 'Code of Practice - Environmental Risk Assessment for Unregulated Waste Disposal Sites'<sup>25</sup> and the site investigation matrices published on the EPA website. The purpose of the certificate of authorisation is to certify compliance with the requirements of the Regulations. A certificate of authorisation will comply with the requirements of Regulation 7(7). Sixteen Certificates of Authorisation have been issued as of January 2020. Out of these sixteen landfills, two landfills contain hazardous waste. There are 32 valid applications on hand with three landfills containing hazardous waste. It is noted that the level of hazardous waste present at each location can vary.

**Key recommendation:**

**16. Remediate identified legacy waste disposal sites containing hazardous waste.**

- *Continued remediation of sites, in line with EPA Code of Practice and appropriate authorisations.*

---

<sup>25</sup> <https://www.epa.ie/licensing/hisland/>

## Appendix A:

### Properties of waste that render it hazardous

Explosive	Waste that is capable, by chemical reaction, of producing gas at such a temperature and pressure and at such a speed as to cause damage to the surroundings
Oxidising	Waste that may, generally by providing oxygen, cause or contribute to the combustion of other materials; flammable waste that is easily set on fire
Flammable	Waste that is easily set on fire
Irritant	Waste that on application can cause skin irritation or damage to the eye
Specific target organ toxicity /aspiration toxicity	Waste that can cause specific target organ toxicity, either from a single or repeated exposure, or which can cause acute toxic effects following aspiration
Acute toxicity	Waste that can cause acute toxic effects following oral or dermal administration, or inhalation exposure
Carcinogenic	Waste that induces cancer or increases its incidence
Corrosive	Waste that on application can cause skin corrosion
Infectious	Waste containing viable micro-organisms or their toxins that are known or reliably believed to cause disease in humans or other living organisms
Toxic for reproduction	Waste that has adverse effects on sexual function and fertility in adult males and females, as well as developmental toxicity in the offspring
Mutagenic	Waste that may cause a mutation that is a permanent change in the amount or structure of the genetic material in a cell
Release of an acute toxic gas	Waste that releases acute toxic gases in contact with water or an acid
Sensitising	Waste that contains one or more substances known to cause sensitising effects to the skin or the respiratory organs
Ecotoxic	Waste that presents or may present immediate or delayed risks for one or more sectors of the environment
Other	Waste capable of exhibiting a hazardous property listed above not directly displayed by the original waste

## Appendix B:

### Progress on recommendations in the 2014 to 2020 National Hazardous Waste Management Plan.

	Action	Outcome
1	Local authorities should consider the information provided in this revised Plan and, in accordance with sections 22 (8) and 26 (6) of the Waste Management Act 1996 as amended.	The three Regional Waste Management Plans set out a framework for the prevention and management of waste and hazardous waste. The overarching policy objectives include the promotion of prevention of hazardous waste and improved separate collection of hazardous waste.
2	Public bodies should be aware of the revised Plan and take its provisions and recommendations into account in their execution of their environmental protection, industrial development and other functions, with the objective of improving their own hazardous waste management and that of their clients, customers and stakeholders.	The EPA continues to assist and support other Government bodies where appropriate.
3	Continuously engage with priority sectors (pharmaceutical, health, agricultural, household, transport, and publishing and printing) and communities (e.g., via the Local Authority Prevention Network (LAPN)) on hazardous waste prevention activities as detailed in the revised plan.	The EPA-led NWPP considers the NHWMP actions and integrates these within relevant prevention projects such as Green Enterprise, LAPN and Smart Farming.
4	Incorporate the prevention of hazardous waste into NWPP and implementation measures within the Regional Waste Plans.	<p>A number of successful actions on hazardous waste have been progressed through the NWPP and LAPN – most notably the Farm Hazardous Waste Collections, but also some other important outputs such as a suite of guidance on benefits of using less chemicals around the household. The three Regional Waste Management Plans included hazardous waste prevention measures, as follows:</p> <ul style="list-style-type: none"> <li>• Harmonisation of prevention activities in the region to link with the NHWMP, producer responsibility operators and other related programmes.</li> <li>• Investigation of opportunities to establish and expand management schemes for particular hazardous &amp; non-hazardous waste streams.</li> </ul>
5	Engage with business towards achieving hazardous waste prevention, cleaner	EPA licences include conditions to provide for the efficient use of resources for all site operations

	technology and better compliance with regulations.	through the implementation of appropriate Environmental Management Systems. Improvements are self-reported as part of the licensee's Annual Environment Report. The REACH Regulations require companies to substitute substances of very-high concern with less hazardous substances or technologies. EPA works with the Health and Safety Authority and the Department of Agriculture, Food & the Marine on implementation of these regulations.
6	Implementation of the Green Public Procurement Action Plan to provide for the substitution or reduction in use of hazardous materials and products in public procurement (eco-design).	<p>The EPA's 2014 Green Procurement Guidance for the Public Sector has been updated and will be published in 2021.</p> <p>A new online training programme for public sector procurers and specifiers was developed in 2020.</p> <p>With the support of the OGP &amp; DECC, EPA developed GPP monitoring and reporting guidance and a template for government departments who are required to report on green public procurement in their 2020 departmental annual reports.</p>
7	Carry out waste characterisation studies via the National Waste Prevention Programme, to profile hazardous waste content arising from smaller sources (e.g., households and small business).	A characterisation study carried out by the EPA in 2016 found that hazardous waste (aerosols, paints, medicines & drugs, batteries) excluding waste electrical and electronic equipment (WEEE) in mixed residual waste increased from 0.9% in 2008 to 1.2% in 2016. Hazardous waste in mixed dry recycling increased slightly, to 0.6%.
8	With support from producer responsibility initiatives, carry out studies on relevant waste streams (e.g., packaging, WEEE), to determine if product-based legislation is having its desired effect and the hazardousness of related waste streams is reducing.	Hazardous waste can be prevented by reducing the hazardousness' or hazardous components / ingredients in products during design and production. The revised Waste Framework Directive includes within its definition of actions for prevention the content of harmful substances in products. The Environmental Protection Agency is the designated market surveillance authority for the enforcement of the RoHS Directive in Ireland.
9	Assist relevant departments and agencies to examine the feasibility of alternatives to the diesel fuel marking system that can help eliminate illegal diesel laundering operations and prevent the generation of hazardous waste and associated environmental clean-up costs arising from such activities.	Regulatory authorities have tackled the illegal fuel trade through a rigorous programme of enforcement action. This has resulted in curtailing fuel laundering in Ireland and has consequently reduced the volumes of fuel laundering waste being illegally deposited.
10	(i) Plan and make provision for resourcing local authorities to develop adequate collection facilities for small-scale quantities of hazardous waste from households and small businesses. (ii) Consider the establishment of	DECC has provided funding for local authorities to carry out annual one-day collections of hazardous waste. These collections took place nationwide and primarily at civic amenity sites, and comprised adhesives, aerosols, anti-freeze, herbicides,

	a network of collection and transfer facilities to capture small-scale quantities of legacy wastes (e.g., asbestos arisings from DIY and small contracting jobs).	household detergents, medicinal waste, mixed fuels, oil, oil filters, paints, pesticides and varnishes. The Regional Waste Management Authorities have completed a National Review of Civic Amenity Sites <sup>26</sup> with the view of improving waste streams collected including hazardous waste.
11	Continue to carry out awareness raising and enforcement to ensure improved hazardous waste collection from small-scale hazardous waste streams (e.g., waste oils from garages).	EPA and local authorities continue to engage in enforcement and awareness activities in this regard (e.g., targeted inspections and awareness via national and sector advertisements). The Smart Garage guide is to be updated and recirculated to garages. The Network for Ireland's Environmental Compliance and Enforcement (NIECE) continues to be utilised as an appropriate means of co-ordinating concerted actions, guidance, procedures and protocols.
12	Assessment and development of potential new producer responsibility obligations for certain hazardous waste streams (e.g., a take-back scheme for unused or expired human medicines), on foot of the recently established review of PRIs and detailed studies into priority hazardous waste streams.	A review of Ireland's PRIs published in 2014 identified the following hazardous waste streams for future assessment of suitability for the establishment of a PRI: Animal remedies & human medicines; Plant protection products; Paint & paint packaging; Ink & ink containers; and Waste oils & oil filters. The Waste Action Plan has committed to examining the feasibility of introducing a PRI for other waste streams such as paint, medicines and farm hazardous waste.
13	Complete a farm hazardous waste collection pilot project and publish pilot project research findings and recommendations.	Pilot project completed with final report published in April 2020.
14	<p>(i) Keep under review the provision and facilitation of hazardous waste treatment capacity and make recommendations on the appropriate economic or other instruments necessary for such capacity to be provided, by either the private or the public sector.</p> <p>(ii) Develop national policy or guidance to direct the control of hazardous waste shipments in order to facilitate self-sufficiency in hazardous waste treatment where this is technically, economically, strategically and environmentally advisable.</p>	<p>Ireland continues to face challenges to achieve complete self-sufficiency given the range of specialist treatment that is required for certain hazardous waste streams.</p> <p>The plan period saw an increase in solvent waste being blended into a recovered fuel product in cement industry.</p>
15	Prepare and maintain, in consultation with various stakeholders, an inventory of national hazardous waste recovery and disposal capacity.	An inventory of national hazardous waste recovery & disposal capacity was commissioned by the EPA in 2016. The inventory report confirms the downward trend observed in the production of solvent waste and outlines the possibilities for utilising co-incineration for certain waste types.

16	Consolidate and reform existing regulations where appropriate and make provision for new hazardous waste regulations where the need becomes apparent during implementation of this revised Plan.	DECC continues to keep the legislative framework under review and regulations continue to be consolidated where it is practical and feasible.
17	Carry out a review of waste licensing and permitting legislation in order to establish a proportionate regulatory mechanism, including relief, to facilitate collection, transport, take-back and temporary storage of certain hazardous wastes arising from small sources.	DECC continues to keep the legislative framework under ongoing review.
18	Co-operate in enforcement activities concerning product-based pollution prevention (e.g., Restriction of Hazardous Substances in Electrical and Electronic Equipment, Persistent Organic Pollutants (POPs)).	Enforcement of these regulations mostly lies with EPA, with some smaller provisions falling to the local authorities. EPA had three market surveillance campaigns carried out during period 2014 to 2017. The campaigns covered a total of 70 samples ranging from consumer electronics to general household goods. Except for battery samples, which were tested for substances prohibited under the Batteries Directive only, relevant components of all samples were tested for substances restricted under the RoHS Directive, POPs and REACH Regulations respectively. Only one sample tested non-compliant: a keyboard, which was subsequently voluntarily withdrawn from the market by the economic operator. The EPA intends to continue with its market surveillance programmes.
19	Identify, assess and, where necessary, remediate sites where hazardous waste was to a significant extent disposed of in the past. This action should conform to the Code of Practice prepared by the EPA's Office of Environmental Enforcement.	A web-based system to facilitate local authorities to register for historic waste disposal and recovery sites (under Sections 22 and 26 of the Waste Management Act 1996) was developed by the EPA in 2009. The Section 22 register has an inbuilt 'Tier 1' risk assessment which indicates to the local authority whether the site is high, medium or low risk. 16 Certificates of Authorisation have been issued. Out of these 16 landfills, 2 landfills have hazardous waste. 32 further applications are under assessment with the EPA.
20	Seek to establish, with the appropriate Northern Ireland authorities, a North-South co-operative group working on hazardous waste issues.	The North South Ministerial Council meets in the Environment Sector to make decisions on common policies and approaches in a cross-border context in areas such as environmental protection, pollution, water quality management and waste management, and is an effective forum to address waste management issues of mutual concern.



<b>21</b>	Conduct regular awareness and information campaigns (e.g., via social media) to proactively update and inform individuals and businesses of available hazardous waste collection services in their areas, as well as their legal obligations. Provide and disseminate practical guidance on the management of sectoral hazardous waste (e.g., household, commercial, farming).	Awareness and information campaigns for management of both household and farm hazardous waste were run throughout the collections. Waste Characterisation carried out by the EPA in 2018 and the 2014, Quarterly National Household Survey led by the CSO, have identified poor management of hazardous and potentially hazardous wastes by householders e.g., public not availing of the free battery recycling regime.
<b>22</b>	Prepare up-to-date factsheets on each of the main hazardous waste streams including information on appropriate management options for such waste streams.	This work was not carried out, but a revised approach to awareness raising is included for the 2021-2027 plan.
<b>23</b>	Complete the code of practice/guidance document on minimum standards for civic amenity sites.	In 2017, EPA published 'Guidance for the Management of Household Hazardous Waste at Civic Amenity Sites', which addresses the management and storage of household hazardous at these sites.
<b>24</b>	Continue to promote awareness and guidance on the correct management of healthcare hazardous waste (e.g., Green Healthcare Programme) to all HSE employees, as appropriate.	Thirty healthcare risk surveys and analysis were carried out under the Green Healthcare Programme and detailed recommendations were made to the hospitals.
<b>25</b>	Carry out a study to evaluate and recommend an appropriate regulatory mechanism and relevant guidance for the management and disposal of spent sheep dip.	This work commenced in 2019. Some delays were encountered in 2020 due to COVID restrictions but the report was completed in Q1 2021.
<b>26</b>	Devise sectoral and waste-stream-specific indicators.	Not substantively progressed during the plan period, but EPA is committed to examining how quantitative indicators can be devised, collected and applied to appropriate sectors in order to assist with monitoring the implementation of the Plan.
<b>27</b>	Report on the revised Plan implementation.	The EPA published an interim review of the National Hazardous Waste Management Plan.

# Appendix C:

## EU & National Hazardous Waste Legislation

### *EU legislation*

The following EU Directives and Regulations are of relevance to the Plan, and in the prevention (principally by restriction of hazardous substances) and management of hazardous waste.

- Industrial Emissions Directive<sup>26</sup> – which sets out the licensing procedures and criteria for certain industrial activities. Licences make specific provision for the prevention of waste and for its proper management. The Directive revises and merges seven separate existing Directives related to industrial emissions into a single Directive, including the Integrated Pollution Prevention and Control (IPPC) Directive (2008/1/EC), Volatile Organic Compounds (VOCs) Solvents Directive (99/13/EC), Waste Incineration Directive (2000/76/EC), Large Combustion Plants (LCPs) Directive (2001/80/EC) and Titanium Dioxide Directives (78/176/EEC, 82/883/EEC and 92/112/EEC) on waste from the titanium dioxide industry.
- The Landfill Directive<sup>27</sup> – the objective of which is to prevent or reduce as far as possible negative effects on the environment from the landfill of waste by introducing strict technical requirements for waste and landfills. The Landfill Directive defines the different categories of waste (municipal, hazardous, non-hazardous and inert) and applies to all landfills.
- Decorative Paints Directive<sup>28</sup> – which limits the solvent content of several classes of paint product. A scheme using Inspection Contractors is in place to monitor vehicle refinishing activities including disposal of VOC-containing wastes. The monitoring and reporting requirements are, from 16 July 2021, repealed and replaced by Regulation (EU) 2019/1020<sup>29</sup> on a national market surveillance strategy.
- The PCB (polychlorinated biphenyls) Directive<sup>30</sup> – requiring the disposal of PCBs and the environmentally sound decontamination or disposal of PCB-containing equipment.

---

<sup>26</sup> Directive 2010/75/EU of the European Parliament and of the Council of 24 November 2010 on industrial emissions (integrated pollution prevention and control) (Recast).

<sup>27</sup> Directive (EU) 2018/850 of the European Parliament and of the Council of 30 May 2018 amending Directive 1999/31/EC on the landfill of waste.

<sup>28</sup> Directive 2004/42/CE of the European Parliament and of the Council of 21 April 2004 on the limitation of emissions of volatile organic compounds due to the use of organic solvents in certain paints and varnishes and vehicle refinishing products and amending Directive 1999/13/EC.

<sup>29</sup> Regulation (EU) 2019/1020 of the European Parliament and of the Council of 20 June 2019 on market surveillance and compliance of products and amending Directive 2004/42/EC and Regulations (EC) No. 765/2008 and (EU) No. 305/2011.

<sup>30</sup> Council Directive 96/59/EC of 16 September 1996 on the disposal of polychlorinated biphenyls and polychlorinated terphenyls (PCBs/PCTs).

- The RoHS (Restriction of Hazardous Substances) Directive<sup>31</sup> – restricting the use of lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls (PBBs) and polybrominated diphenyl ethers (PBDEs) in new electrical and electronic equipment.
- The Classification, Labelling and Packaging of Substances and Mixtures Regulation<sup>32</sup> – which uses internationally agreed classification criteria and labelling elements in order to facilitate trade and to contribute towards global efforts to protect humans and the environment from hazardous effects of chemicals.
- Directive (EU) 2018/849 of the European Parliament and of the Council of 30 May 2018 amending Directives 2000/53/EC on end-of-life vehicles, 2006/66/EC on batteries and accumulators and waste batteries and accumulators, and 2012/19/EU on waste electrical and electronic equipment (Text with EEA relevance) amends the following Directives:
  - The End-of-Life Vehicles Directive<sup>33</sup> – obligations with regard to the restriction of use of certain hazardous substances in vehicles and the collection, treatment, reuse and recovery of end-of-life vehicles.
  - The Batteries Directive<sup>34</sup> – obligations with regard to the restriction of use of certain hazardous substances in batteries and accumulators, and collection, treatment and recycling of batteries.
  - The WEEE (Waste Electrical and Electronic Equipment) Directive<sup>35</sup> – imposing a producer responsibility obligation in respect of WEEE management, several categories of which are classified as hazardous waste.

The Directive primarily establishes monitoring and reporting requirements for Member States regarding the reuse and recovery goals for end-of-life vehicles and collection targets for waste batteries, accumulators and electrical and electronic equipment.

---

<sup>31</sup> Directive 2011/65/EU of the European Parliament and of the Council of 8 June 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment (recast).

<sup>32</sup> Regulation (EC) No. 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No. 1907/2006.

<sup>33</sup> Directive 2000/53/EC of the European Parliament and of the Council of 18 September 2000 on end-of-life vehicles as amended by Directive (EU) 2018/849 of the European Parliament and of the Council of 30 May 2018 amending Directives 2000/53/EC on end-of-life vehicles, 2006/66/EC on batteries and accumulators and waste batteries and accumulators, and 2012/19/EU on waste electrical and electronic equipment

<sup>34</sup> Directive 2006/66/EC of the European Parliament and of the Council of 6 September 2006 on batteries and accumulators and waste batteries and accumulators and repealing Directive 91/157/EEC as amended by Directive (EU) 2018/849 of the European Parliament and of the Council of 30 May 2018 amending Directives 2000/53/EC on end-of-life vehicles, 2006/66/EC on batteries and accumulators and waste batteries and accumulators, and 2012/19/EU on waste electrical and electronic equipment.

<sup>35</sup> Directive 2012/19/EU of the European Parliament and of the Council of 4 July 2012 on waste electrical and electronic equipment (WEEE) (recast) as amended by Directive (EU) 2018/849 of the European Parliament and of the Council of 30 May 2018 amending Directives 2000/53/EC on end-of-life vehicles, 2006/66/EC on batteries and accumulators and waste batteries and accumulators, and 2012/19/EU on waste electrical and electronic equipment.

- Regulation (EU) 2019/1021 on persistent organic pollutants aims to protect human health and the environment by eliminating, or restricting the production and use of, persistent organic pollutants (POPs) as defined in the Stockholm Convention on Persistent Organic Pollutants or the Protocol to the 1979 Convention on Long-Range Transboundary Air Pollution on Persistent Organic Pollutants. The regulation seeks to minimise, or eliminate where possible, releases of such substances, and regulate waste containing or contaminated by them. The regulation particularly takes into account the precautionary principle. The regulation applies to waste in that:
  - Those who produce or hold waste must avoid the waste being contaminated, as far as possible, with substances listed in Annex IV.
  - In most cases, contaminated waste must be disposed of or recovered quickly to ensure that the POP content is destroyed or transformed.
  - EU countries must ensure that the production, collection and transportation of contaminated waste, as well as its storage and treatment, are traceable and carried out in conditions providing protection for the environment and human health.
- The Packaging Directive<sup>36</sup> – restricts the aggregate concentration of heavy metals (lead, cadmium, mercury and hexavalent chromium) in packaging. Essential manufacturing requirements are set out such that the presence of noxious and other hazardous substances and materials as constituents of the packaging material or of any of the packaging components is minimised with regard to their presence in emissions, ash or leachate when packaging or packaging residues from management operations or packaging wastes are incinerated or landfilled. Directive (EU) 2018/852 amends Directive 94/62/EC and aims to prevent packaging waste production and transition towards a circular economy in how packaging waste is treated with a greater focus on reuse and recycling. EU countries must ensure that the packaging placed on the market meets the essential requirements contained in Annex II of the Directive: to limit the weight and volume of packaging to a minimum in order to meet the required level of safety, hygiene and acceptability for consumers; to reduce the content of hazardous substances and materials in the packaging material and its components; to design reusable or recoverable packaging.
- The Transfrontier Shipment of Waste Regulation<sup>37</sup> – imposes controls on the import, export and transit of waste, including hazardous waste.
- The Animal Remedies Directive<sup>38</sup> – regulates the authorisation, manufacturing, supervision, sale, distribution and use of veterinary medicinal products. It puts in place appropriate

---

<sup>36</sup> European Parliament and Council Directive 94/62/EC of 20 December 1994 on packaging and packaging waste (amended by Directive (EU) 2018/852 amending Directive 94/62/EC on packaging and packaging waste).

<sup>37</sup> Regulation (EC) No. 1013/2006 of the European Parliament and of the Council of 14 June 2006 on shipments of waste.

<sup>38</sup> Directive 2001/82/EC of the European Parliament and of the Council of 6 November 2001 on the Community code relating to veterinary medicinal products.

collection systems for veterinary medicinal products that are unused or expired. This Directive will be repealed and replaced by Regulation (EU) 2019/6 as of 28 January 2022.<sup>39</sup>

- The Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) Regulation<sup>40</sup> – applies to the identification of the properties of chemicals and the provision of safety information and calls for progressive substitution of dangerous chemicals as suitable alternatives are identified.
- The Port Reception Facilities Directive<sup>41</sup> – imposes controls to protect the marine environment and any negative effects of waste from ships using EU ports, by improving the availability and use of port reception facilities.
- The Ozone Depleting Substances Regulation<sup>42</sup> – prohibits and restricts the use of ‘controlled substances’ that have the potential to deplete the ozone layer, including inter alia chlorofluorocarbons (CFCs), hydrochlorofluorocarbons (HCFCs), halons, methyl bromide and carbon tetrachloride.
- The Fluorinated Greenhouse Gas Regulation<sup>43</sup> – regulates containment, use, recovery and destruction of fluorinated greenhouse gases (f-gases), such as hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulphur hexafluorides (SF6s). The Regulations control the phasing down of supply of bulk HFCs and prohibit certain products and equipment. There is a focus on global warming potential (GWP), with more onerous controls for f-gases with high GWP.
- The Persistent Organic Pollutants (POPs) Regulation<sup>44</sup> – sets out the requirements to protect human health and the environment by eliminating, or restricting the production and use of, POPs and regulating waste containing or contaminated by them.

---

<sup>39</sup> Regulation (EU) 2019/6 on veterinary medicinal products and repealing Directive 2001/82/EC.

<sup>40</sup> Regulation (EC) No. 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, amending Directive 1999/45/EC and repealing Council Regulation (EEC) No. 793/93 and Commission Regulation (EC) No. 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC.

<sup>41</sup> Directive (EU) 2019/883 of the European Parliament and of the Council of 17 April 2019 on port reception facilities for the delivery of waste from ships, amending Directive 2010/65/EU and repealing Directive 2000/59/EC.

<sup>42</sup> Regulation (EC) No. 1005/2009 of the European Parliament and of the Council of 16 September 2009 on substances that deplete the ozone layer (recast).

<sup>43</sup> Regulation (EU) No. 517/2014 of the European Parliament and of the Council of 16 April 2014 on fluorinated greenhouse gases and repealing Regulation (EC) No 842/2006.

<sup>44</sup> Regulation (EU) 2019/1021 of the European Parliament and of the Council of 20 June 2019 on persistent organic pollutants recasting Regulation (EC) No 850/2004.

- Pollutant Release and Transfer Register (PRTR) Regulation<sup>45</sup> – sets out the requirements for a European Pollutant Release and Transfer Register.
- Use, Storage and Trade of Mercury Regulation<sup>46</sup> – sets out the requirement concerning the banning of exports, imports and use of certain mercury compounds and mixtures of mercury and the safe storage of metallic mercury.
- Extractive Industries Waste Directive<sup>47</sup> concerns the management of waste from the extractive industries.
- The EU Animal By-Products Regulations (Regulation (EC) No. 1069/2009<sup>48</sup> and Commission Regulation (EC) No. 142/2011<sup>49</sup>) lay down the rules concerning animal by-products including disposal requirements.
- Sustainable Use of Pesticides Directive<sup>50</sup> – concerns closer monitoring, and increased training and information for users of pesticides.

### *National Legislation*

The following statutory instruments are relevant to the Plan, and the regulation of hazardous wastes and waste containing hazardous substances in Ireland:

- *S.I. No. 137 of 1997 – Waste Management (Planning) Regulations 1997* provides for, in part, the relationship between the National Hazardous Waste Management Plans and local and regional waste management plans.
- *S.I. No. 163 of 1998 – Waste Management (Hazardous Waste) Regulations* makes certain provisions including for the supply of batteries, the reporting of certain PCB-contaminated equipment and the management and disposal of polychlorinated biphenyls (PCBs) and PCB-containing wastes and waste asbestos.

---

<sup>45</sup> Regulation (EC) No. 166/2006 of the European Parliament and of the Council of 18 January 2006 concerning the establishment of a European Pollutant Release and Transfer Register and amending Council Directives 91/689/EEC and 96/61/EC.

<sup>46</sup> Regulation (EU) 2017/852 of the European Parliament and of the Council of 17 May 2017 on mercury, and repealing Regulation (EC) No. 1102/2008.

<sup>47</sup> Directive 2006/21/EC of the European Parliament and of the Council of 15 March 2006 on the management of waste from extractive industries and amending Directive 2004/35/EC.

<sup>48</sup> Regulation (EC) No. 1069/2009 of the European Parliament and of the Council of 21 October 2009 laying down health rules as regards animal by-products and derived products not intended for human consumption and repealing Regulation (EC) No. 1774/2002 (Animal by-products Regulation).

<sup>49</sup> Commission Regulation (EU) No. 142/2011 of 25 February 2011 implementing Regulation (EC) No. 1069/2009 of the European Parliament and of the Council laying down health rules as regards animal by-products and derived products not intended for human consumption and implementing Council Directive 97/78/EC as regards certain samples and items exempt from veterinary checks at the border under that Directive.

<sup>50</sup> Directive 2009/128/EC of the European Parliament and of the Council of 21 October 2009 establishing a framework for Community action to achieve the sustainable use of pesticides.

- *S.I. No. 117 of 2003 – European Communities (Port Reception Facilities for Ship-Generated Waste and Cargo Residues) Regulations (as amended)* obliges harbour masters and port authorities to prepare waste management plans for the management of ship-generated waste and cargo residues at Irish ports and harbours.
- *S.I. No. 395 of 2004 – Waste Management (Licensing) Regulations 2004 (as amended)* provides for the issuing and enforcement of waste licences by the EPA.
- *S.I. No. 419 of 2007 – Waste Management (Shipments of Waste) Regulations* streamlines the administration of Regulation (EC) No. 1013/2006 on the shipment of waste and establishes the National TFS Office (NTFSO) as the competent authority in respect of the import, export and transit of waste through Ireland.
- *S.I. No. 786 of 2007 – European Communities (Animal Remedies) Regulations* sets out obligations concerning unused or expired animal remedies.
- *S.I. No. 820 of 2007 – Waste Management (Collection Permit) Regulations 2007 (as amended)* provides for the issuing and enforcement of waste collection permits. The National Waste Collection Permit Office (operated by Offaly County Council) has responsibility for the issuing of collection permits.
- *S.I. No. 821 of 2007 – Waste Management (Facility Permit and Registration) Regulations 2007 (as amended)* provides for the issuing and enforcement of waste facility permits and certificates of registration for prescribed activities.
- *S.I. No. 113 of 2008 – Waste Management (Registration of Brokers and Dealers) Regulations* regulates waste contractors who arrange shipment of waste. A waste broker arranges to handle, transport, dispose of or recover controlled waste on behalf of others. Waste brokers include waste dealers who acquire waste and sell it on.
- *S.I. No. 271 of 2008 – European Communities (Classification, Packaging and Labelling of Dangerous Preparations) (Amendment) Regulations 2008*
- *S.I. No. 488 of 2008 – Regulation of Retail Pharmacy Businesses Regulations 2008 (as amended)* regulate how a pharmacy may accept returned medicines for proper disposal.
- *S.I. No. 524 of 2008 – Waste Management (Certification of Historic Unlicensed Waste Disposal and Recovery Activity) Regulations* provide primarily for the certification of historic unlicensed local authority waste disposal sites in operation between 1977 and 1996.
- *S.I. No. 566 of 2009 – Waste Management (Management of Waste from the Extractive Industries) Regulations* provides for measures on the management of waste from the extractive industries including hazardous waste.
- *S.I. No. 126 of 2011 – European Communities (Waste Directive) Regulations 2011 (as amended)* transposes Directive 2008/98/EC on waste and formalises the concepts of ‘by-product’ and ‘end-of-waste’ in Irish law.
- *S.I. No. 324 of 2011 – European Communities (Shipments of Hazardous Waste exclusively within Ireland) Regulations* details the control of hazardous waste shipments in Ireland.
- *S.I. No. 465 of 2011 – Control of Substances that Deplete the Ozone Layer Regulations* makes provision for the full and effective implementation of Regulation (EC) No. 1005/2009 on substances that deplete the ozone layer.
- *S.I. No. 155 of 2012 – European Communities (Sustainable Use of Pesticides) Regulations 2012 (as amended)* gives effect to the Directive concerning measures to achieve the

sustainable use of pesticides. These regulations detail specifications such as a register of pesticides, application of pesticides including distance from water courses, and equipment.

- *S.I. No. 513 of 2012 – European Union (Restriction of Certain Hazardous Substances in Electrical and Electronic Equipment) Regulations (as amended)* transposes the provisions of the RoHS Directive in Ireland.
- *S.I. No. 564 of 2012 – European Union (Paints, Varnishes, Vehicle Refinishing Products and Activities) Regulations 2012 (as amended)* governs installations and activities using organic solvents, such as vehicle refinishers and dry cleaners, for the purpose of preventing or limiting emissions of volatile organic compounds.
- *S.I. No. 565 of 2012 – European Union (Installations and Activities Using Organic Solvents) Regulations*
- *S.I. No. 138 of 2013 – European Union (Industrial Emissions) Regulations (as amended), S.I. No. 137 of 2013 – Environmental Protection Agency (Industrial Emissions) (Licensing) Regulations, S.I. No. 148 of 2013 – European Union (Waste Incineration Plants & Waste Co-incineration Plants) Regulations, S.I. No. 566 of 2012 – European Union (Large Combustion Plants) Regulations, S.I. No. 565 of 2012 – European Union (Installations and Activities using Organic Solvents) Regulations* provide for the issuing and enforcement of licences by the EPA for Industrial Emission Directive activities.
- *S.I. No. 72 of 2013 – European Communities (Metallic Mercury Waste) Regulations* brings into force specific criteria for the storage of metallic mercury considered as waste.
- *S.I. No. 149 of 2014 – European Union (Waste Electrical and Electronic Equipment) Regulations 2014 (as amended)* gives effect to the provisions of Directive 2012/19/EU on waste electrical and electronic equipment.
- *S.I. No. 281 of 2014 – European Union (End-of-Life Vehicles) Regulations 2014 (as amended)* places specific obligations on vehicle owners, producers and authorised treatment facilities relating to the deposit, treatment and disposal of end-of-life vehicles. Further amendments establish a mechanism for the introduction of a compliance scheme in Ireland, ELVES.
- *S.I. No. 283 of 2014 – European Union (Batteries and Accumulators) Regulations 2014 (as amended)* governs the transport, recycling and disposal of waste batteries and accumulators and forms part of a Producer Responsibility Initiative whereby the person or company that places the product on the Irish market has responsibility for financing the collection, storage, recycling and treatment of the product when it becomes waste. These regulations give effect to the provisions of European Parliament and Council Directive 2013/56/EU of 20 November 2013 amending Directive 2006/66/EC on batteries and accumulators and waste batteries and accumulators as regards the placing on the market of portable batteries and accumulators containing cadmium intended for use in cordless power tools, and of button cells with low mercury content.
- *S.I. No. 233 of 2015 – European Union (Properties of Waste which Render it Hazardous) Regulations 2015* amends the Waste Management Act 1996 to replace the second schedule with a new schedule for the 'Properties of waste which render it hazardous'.
- *S.I. No. 658 of 2016 – European Union (Fluorinated Greenhouse Gas) Regulations 2016* gives further effect to certain elements of the European Regulation on fluorinated greenhouse gases EU No. 517/2014 (Repealing regulation (EC) No. 842/2006).



- *S.I. No. 383 of 2018 – European Union (Properties of Waste which Render it Hazardous) Regulations 2018* amends the Waste Management Act 1996 to replace Ecotoxic in the second schedule.
- *S.I. No. 533 of 2018 – European Union (Mercury) Regulations 2018* gives effect to the EU Mercury Regulation (EU) 2017/852 which establishes a regulatory framework to ensure a high level of protection of human health and the environment from anthropogenic emissions and releases of mercury and mercury compounds. The regulations cover measures and conditions concerning:
  - the management of mercury waste;
  - the manufacture and use of and trade in mercury-added products;
  - the use and storage of and trade in mercury, mercury compounds and mixtures of mercury.
- *S.I. No. 146 of 2020 – European Union (Persistent Organic Pollutants) Regulations 2020* replaces the Persistent Organic Pollutants Regulations, S.I. No. 235 of 2010. The regulations identify the Environmental Protection Agency as the competent authority and the requirement for a National Implementation Plan on POPs. The regulations detail the roles of other public authorities and how any person involved in producing or holding waste should provide information to the nominated competent authority.
- *S.I. No. 189 of 2020 – Environmental Protection Agency (Integrated Pollution Control) (Licensing) (Amendment) Regulations 2020* amends S.I. No. 283 of 2013, the Environmental Protection Agency (Integrated Pollution Control) (Licensing) Regulations 2013.
- *S.I. No. 321 of 2020 – European Union (Landfill) Regulations 2020* gives effect to Directive (EU) 2018/850 of the European Parliament and of the Council of 30 May 2018 amending Directive 1999/31/EC on the landfill of waste. The aim of these Regulations is to ensure a progressive reduction of landfilling of waste, in particular of waste that is suitable for recycling or other recovery, and, by way of stringent operational and technical requirements on the waste and landfills, to provide for measures to prevent or reduce as far as possible negative effects on the environment from landfilling of waste, during the whole life cycle of the landfill.
- *S.I. No. 322 of 2020 – European Union (Packaging) Regulations 2020 (as amended)* promotes the recovery and recycling of packaging waste. Its provisions particularly concern achievement of the targets for the recovery of packaging waste established by Directive 94/62/EC on packaging and packaging waste as amended by European Parliament and Council Directive 2004/12/EC and EU Packaging Directive EU 2018/852 amending Directive 94/62/EC.
- *S.I. No. 323 of 2020 – European Union (Waste Directive) Regulations 2020*. The regulations give effect to Directive 2018/851 of the European Parliament and of the Council of 30 May 2018 on waste and amending certain directives. The purposes for which these Regulations are made include the purpose of giving effect to provisions of the Waste Directive and partial effect to the Batteries, ELV, WEEE, Packaging and Landfill Directive(s).
- *S.I. No. 73 of 2000 – Waste Management (Hazardous Waste) (Amendment) Regulations 2000* amending *S.I. No. 163 of 1998 – Waste Management (Hazardous Waste) Regulations 1998 (as amended)* includes the purpose of giving effect to provisions of Commission

Directive 98/101/EC of 22 December 1998 adapting to technical progress Council Directive 91/157/EEC on batteries and accumulators containing certain dangerous substances.

- *S.I. No. 734 of 2005 – Animal Remedies Regulations 2005 (as amended)* requires a registered veterinary practitioner or pharmacist to have in place a system whereby farmers can return an animal remedy that is unused or expired, and to make farmers aware of these return arrangements.
- *S.I. No. 143 of 2007 – European Communities (Control of Animal Remedies and their Residues) Regulations 2007.*
- *S.I. No. 144 of 2007 – European Communities (Animal Remedies) Regulations 2007.*
- *S.I. No. 786 of 2007 – European Communities (Animal Remedies) Regulations* sets out obligations concerning unused or expired animal remedies.
- *S.I. No. 86 of 2008 – Waste Management (Facility Permit and Registration) (Amendment) Regulations* amends *S.I. No. 821 of 2007 – Waste Management (Facility Permit and Registration) Regulations 2007 (as amended)*.
- *S.I. No. 182 of 2009 – European Communities (Animal Remedies) (Amendment) Regulations 2009.*
- *S.I. No. 183 of 2009 – European Communities (Control of Animal Remedies and their Residues) Regulations 2009.*
- *S.I. No. 262 of 2012 – European Communities (Animal Remedies) (Amendment) Regulations 2012.*
- *S.I. No. 263 of 2012 – European Communities (Control of Animal Remedies and their Residues) (Amendment) Regulations 2012.*
- *S.I. No. 162 of 2014 – European Communities (Animal Remedies) (Amendment) Regulations 2014.*
- *S.I. No. 320 of 2014 – Waste Management (Facility Permit and Registration) (Amendment) Regulations 2014* amending *S.I. No. 821 of 2007 – Waste Management (Facility Permit and Registration) Regulations 2007 (as amended)*. These regulations are aimed at ensuring full traceability of waste purchased.
- *S.I. No. 348 of 2014 – European Union (Restriction of Certain Hazardous Substances in Electrical and Electronic Equipment) (Amendment) Regulations 2014* amending *S.I. No. 512 of 2012 – European Union (Restriction of Certain Hazardous Substances in Electrical and Electronic Equipment) Regulations 2012 (as amended)*.
- *S.I. No. 361 of 2014 – European Communities (Animal Remedies) (Amendment) (No. 2) Regulations 2014.*
- *S.I. No. 398 of 2014 European Union (Paints, Varnishes, Vehicle Refinishing Products and Activities) (Amendment) Regulations 2014* amending *S.I. No. 564 of 2012 – European Union (Paints, Varnishes, Vehicle Refinishing Products and Activities) Regulations 2012 (as amended)* governs installations and activities using organic solvents, such as vehicle refinishers and dry cleaners, for the purpose of preventing or limiting emissions of volatile organic compounds.
- *S.I. No. 546 of 2014 – Waste Management (Facility Permit and Registration) (Amendment) Regulations 2014* amending *S.I. No. 821 of 2007 – Waste Management (Facility Permit and Registration) Regulations 2007 (as amended)* details how a waste facility permit holder

must apply for a licence with the EPA if its activity falls within Part 1 of the Third Schedule within a specified time period.

- *S.I. No. 619 of 2014 – European Union (Restriction of Certain Hazardous Substances in Electrical and Electronic Equipment) (Amendment No. 2) Regulations 2014* amending *S.I. No. 512 of 2012 – European Union (Restriction of Certain Hazardous Substances in Electrical and Electronic Equipment) Regulations 2012 (as amended)*.
- *S.I. No. 198 of 2015 – Waste Management (Facility Permit and Registration) (Amendment) Regulations 2015* amending *S.I. No. 821 of 2007 Waste Management (Facility Permit and Registration) Regulations 2007 (as amended)* details requirements for collection of household wastes and lists a minimum of recyclable materials that must be accepted by the collector. The regulation also provides for waste segregation and presentation guidelines and details how hazardous waste must be collected in an appropriate manner.
- *S.I. No. 347 of 2015 – European Union (Batteries and Accumulators) (Amendment) Regulations 2015* amending *S.I. No. 283/2014 – European Union (Batteries and Accumulators) Regulations 2014*.
- *S.I. No. 532 of 2015 – European Union (Transmissible Spongiform Encephalopathies – TSEs) Regulations 2015 (as amended)* regulates for the prevention, control and eradication of certain transmissible spongiform encephalopathies and control of animal by-products, e.g. specified risk material (SRM).
- *S.I. No. 532 of 2015 – European Union (Transmissible Spongiform Encephalopathies) Regulations 2015*.
- *S.I. No. 542 of 2015 – European Union (Packaging) (Amendment) Regulations 2015* amending *S.I. No. 282 of 2014 – European Union (Packaging) Regulations 2014 (as amended)* promotes the recovery and recycling of packaging waste. Its provisions particularly concern achievement of the targets for the recovery of packaging waste established by Directive 94/62/EC on packaging and packaging waste as amended by European Parliament and Council Directive 2004/12/EC.
- *S.I. No. 24 of 2016 – Waste Management (Collection Permit) (Amendment) Regulations 2016* amending *S.I. No. 820 of 2007 – Waste Management (Collection Permit) Regulations 2007 (as amended)* details how the nominated authority shall attach conditions to a waste collection permit that give effect to the objectives of the National Hazardous Waste Management Plan
- *S.I. No. 278 of 2016 – European Communities (Animal Remedies) (Amendment) Regulations 2016*.
- *S.I. No. 315 of 2016 – European Union (Waste Directive) (Amendment) Regulations 2016* amends *Regulation 14 of European Communities (Waste Directive) Regulations, S.I. No. 126 of 2011*.
  - 3(b) Regulations under this section may include provisions for the imposition of producer responsibility obligations on producers of products including provisions requiring the producer of a specified product to partly or wholly bear the waste management costs of that product and/or the sharing of these costs with the distributors of such specified products.
  - 3(c) In order to maximise environmental benefits, including the environmentally sound management of products at their end of life, regulations under this section

may also include provisions for the application of economic instruments including the making of arrangements relating to the display of environmental management charges, at a specified rate, by a producer or distributor as appropriate, to the purchasers of specified products.

- *S.I. No. 346 of 2016 – Waste Management (Collection Permit) (Amendment) (No. 2) Regulations 2016* amending *S.I. No. 820 of 2007 – Waste Management (Collection Permit) Regulations 2007 (as amended)* further details provisions for the collection and management of household waste. These regulations detail how a nominated authority that proposes to amend conditions of a collection permit may give notice in writing to the Agency with regard to collection of hazardous wastes.
- *S.I. No. 372 of 2016 – European Union (Waste Directive) (Recovery Operations) Regulations* allows for the substitution of the fourth schedule, Recovery Operations, of the *Waste Management Act 1996* with a new fourth schedule for recovery operations.
- *S.I. No. 550 of 2016 – European Communities (Port Reception Facilities for Ship Generated Waste and Cargo Residues) (Amendment) Regulations 2016* amending *S.I. No. 117 of 2003 – European Communities (Port Reception Facilities for Ship-generated Waste and Cargo Residues) Regulations (as amended)* requires information to be notified before entry into a port and including waste details.
- *S.I. No. 80 of 2016 – Regulation of Retail Pharmacy Businesses (Amendment) Regulations 2016* amending *S.I. No. 488 of 2008 Regulation of Retail Pharmacy Businesses Regulations 2008*
- *S.I. No. 558 of 2017 – Animal Health and Welfare (Animal Remedies Veterinary Practice and Veterinary Medicine) Regulations 2017*
- *S.I. No. 156 of 2018 – European Union (Transmissible Spongiform Encephalopathies) (Amendment) Regulations 2018*
- *S.I. No. 183 of 2018 – European Union (End of Life Vehicles) (Amendment) Regulations 2018* amending *S.I. No. 281 of 2014 – European Union (End-of-Life Vehicles) Regulations 2014 (as amended)*.
- *S.I. No. 184 of 2018 – European Union (Restriction of Certain Hazardous Substances in Electrical and Electronic Equipment) (Amendment) Regulations 2018* amending *S.I. No. 512 of 2012 – European Union (Restriction of Certain Hazardous Substances in Electrical and Electronic Equipment) Regulations 2012 (as amended)*.
- *S.I. No. 233 of 2019 – European Union (Waste Electrical and Electronic Equipment) (Amendment) Regulations 2019* amending *S.I. No. 149 of 2014 European Union (Waste Electrical and Electronic Equipment) Regulations 2014 (as amended)* detail the management and control of WEEE with Ireland.
- *S.I. No. 246 of 2019 – European Union (Restriction of Certain Hazardous Substances in Electrical and Electronic Equipment) (Amendment) Regulations 2019* amending *S.I. No. 512 of 2012 – European Union (Restriction of Certain Hazardous Substances in Electrical and Electronic Equipment) Regulations 2012 (as amended)*.
- *S.I. No. 250 of 2019 – Waste Management (Facility Permit and Registration) (Amendment) Regulations 2019* amend *S.I. No. 821 of 2007 – Waste Management (Facility Permit and Registration) Regulations 2007 (as amended)* to increase the total maximum quantity of waste which may be recovered at a Class 5 activity facility from less than 100,000 tonnes to

less than 200,000 tonnes. Existing waste facilities wishing to increase must apply for a new facility permit as opposed to reviewing their existing one.

- *S.I. No. 367 of 2019 – European Union (Fluorinated Greenhouse Gas) (Amendment) Regulations 2019 amending S.I. No. 658 of 2016 – European Union (Fluorinated Greenhouse Gas) Regulations 2016* to address matters arising from the departure of the UK from the European Union.
- *S.I. No. 438 of 2019 – European Communities (Sustainable Use of Pesticides) (Amendment) Regulations 2019 amending S.I. No. 155 of 2012 – European Communities (Sustainable Use of Pesticides) Regulations 2012 (as amended)*
- *S.I. No. 534 of 2019 – European Union (Fluorinated Greenhouse Gas) (Amendment) (No. 2) Regulations 2019 amending S.I. No. 658 of 2016 – European Union (Fluorinated Greenhouse Gas) Regulations 2016* to address matters arising from the departure of the UK from the European Union.
- *S.I. No. 618 of 2019 – European Union (Waste Licensing) (Amendment) Regulations 2019 amending S.I. No 395 of 2004 – Waste Management (Licensing) Regulations 2004 (as amended)* redefines ‘treatment’ as ‘the physical, thermal, chemical or biological processes, including sorting, that change the characteristics of the waste in order to reduce its volume or hazardous nature, facilitate its handling or enhance recovery’.
- *S.I. No. 23 of 2020 – European Union (Restriction of Certain Hazardous Substances in Electrical and Electronic Equipment) (Amendment) Regulations 2020 amending S.I. no. 512 of 2012 – European Union (Restriction of Certain Hazardous Substances in Electrical and Electronic Equipment) Regulations 2012 (as amended)*. The Regulations include the purpose of giving effect to the provisions of Commission Delegated Directives (EU) 2019/169, (EU) 2019/170, (EU) 2019/171, (EU) 2019/172, (EU) 2019/173, (EU) 2019/174, (EU) 2019/175, (EU) 2019/176 and (EU) 2019/177 of the European Parliament and of the Council of 16 November 2018 and (EU) 2019/1845 and (EU) 2019/1846 of the European Parliament and of the Council of 8 August 2019 amending, for the purposes of adapting to scientific and technical progress, Annex III to Directive 2011/65/EU of the European Parliament and of the Council of 8 June 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment.
- *S.I. No. 32 of 2020 – European Union (Fluorinated Greenhouse Gas) (Amendment) Regulations 2020 amending S.I. No. 658 of 2016 – European Union (Fluorinated Greenhouse Gas) Regulations 2016* to address matters arising from the departure of the UK from the European Union.
- *S.I. No. 82 of 2020 – European Union (End-of-Life Vehicles) (Amendment) Regulations 2020 amending S.I. No. 281 of 2014 – European Union (End-of-Life Vehicles) Regulations 2014 (as amended)*.
- *S.I. No. 190 of 2020 – Environmental Protection Agency (Industrial Emissions) (Licensing) (Amendment) Regulations 2020 amending S.I. No. 137 of 2013 – European Union (Industrial Emissions) Regulations 2013 (as amended)* to include requirements relating to Environmental Impact Assessment Reports (replacing Environmental Impact Statements).
- *S.I. No. 264 of 2020 – European Union (Restriction of Certain Hazardous Substances in Electrical and Electronic Equipment) (Amendment) (No. 2) Regulations 2020 amending S.I. No. 512 of 2012 European Union (Restriction of Certain Hazardous Substances in Electrical*

*and Electronic Equipment) Regulations 2012 (as amended)*. The purpose for which these Regulations are made is to give effect to the provisions of Commission Delegated Directive (EU) 2020/364 of the European Parliament and of the Council of 17 December 2019 amending, for the purposes of adapting to scientific and technical progress, Annex IV to Directive 2011/65/EU of the European Parliament and of the Council of 8 June 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment.