Environmental Protection Agency
An Ghníomhaireacht um Chaomhnú Comhshaoil

By-Product — Guidance Note

A guide to by-products and submitting a by-product notification under Article 27 of the European Communities (Waste Directive) Regulations 2011 (S.I. No 126 of 2011)

ENVIRONMENTAL PROTECTION AGENCY

The Environmental Protection Agency (EPA) is responsible for protecting and improving the environment as a valuable asset for the people of Ireland. We are committed to protecting people and the environment from the harmful effects of radiation and pollution.

The work of the EPA can be divided into three main areas:

Regulation: *We implement effective regulation and environmental compliance systems to deliver good environmental outcomes and target those who don't comply.*

Knowledge: *We provide high quality, targeted and timely environmental data, information and assessment to inform decision making at all levels.*

Advocacy: *We work with others to advocate for a clean, productive and well protected environment and for sustainable environmental behaviour.*

Our Responsibilities

Licensing

We regulate the following activities so that they do not endanger human health or harm the environment:

- waste facilities (*e.g. landfills, incinerators, waste transfer stations*);
- large scale industrial activities (*e.g. pharmaceutical, cement manufacturing, power plants*);
- intensive agriculture (*e.g. pigs, poultry*);
- the contained use and controlled release of Genetically Modified Organisms (*GMOs*);
- sources of ionising radiation (*e.g. x-ray and radiotherapy equipment, industrial sources*);
- large petrol storage facilities;
- waste water discharges;
- dumping at sea activities.

National Environmental Enforcement

- Conducting an annual programme of audits and inspections of EPA licensed facilities.
- Overseeing local authorities' environmental protection responsibilities.
- Supervising the supply of drinking water by public water suppliers.
- Working with local authorities and other agencies to tackle environmental crime by coordinating a national enforcement network, targeting offenders and overseeing remediation.
- Enforcing Regulations such as Waste Electrical and Electronic Equipment (WEEE), Restriction of Hazardous Substances (RoHS) and substances that deplete the ozone layer.
- Prosecuting those who flout environmental law and damage the environment.

Water Management

- Monitoring and reporting on the quality of rivers, lakes, transitional and coastal waters of Ireland and groundwaters; measuring water levels and river flows.
- National coordination and oversight of the Water Framework Directive.
- Monitoring and reporting on Bathing Water Quality.

Monitoring, Analysing and Reporting on the Environment

- Monitoring air quality and implementing the EU Clean Air for Europe (CAFÉ) Directive.
- Independent reporting to inform decision making by national and local government (*e.g. periodic reporting on the State of Ireland's Environment and Indicator Reports*).

Regulating Ireland's Greenhouse Gas Emissions

- Preparing Ireland's greenhouse gas inventories and projections.
- Implementing the Emissions Trading Directive, for over 100 of the largest producers of carbon dioxide in Ireland.

Environmental Research and Development

- Funding environmental research to identify pressures, inform policy and provide solutions in the areas of climate, water and sustainability.

Strategic Environmental Assessment

- Assessing the impact of proposed plans and programmes on the Irish environment (*e.g. major development plans*).

Radiological Protection

- Monitoring radiation levels, assessing exposure of people in Ireland to ionising radiation.
- Assisting in developing national plans for emergencies arising from nuclear accidents.
- Monitoring developments abroad relating to nuclear installations and radiological safety.
- Providing, or overseeing the provision of, specialist radiation protection services.

Guidance, Accessible Information and Education

- Providing advice and guidance to industry and the public on environmental and radiological protection topics.
- Providing timely and easily accessible environmental information to encourage public participation in environmental decision-making (*e.g. My Local Environment, Radon Maps*).
- Advising Government on matters relating to radiological safety and emergency response.
- Developing a National Hazardous Waste Management Plan to prevent and manage hazardous waste.

Awareness Raising and Behavioural Change

- Generating greater environmental awareness and influencing positive behavioural change by supporting businesses, communities and householders to become more resource efficient.
- Promoting radon testing in homes and workplaces and encouraging remediation where necessary.

Management and Structure of the EPA

The EPA is managed by a full time Board, consisting of a Director General and five Directors. The work is carried out across five Offices:

- Office of Environmental Sustainability
- Office of Environmental Enforcement
- Office of Evidence and Assessment
- Office of Radiation Protection and Environmental Monitoring
- Office of Communications and Corporate Services

The EPA is assisted by an Advisory Committee of twelve members who meet regularly to discuss issues of concern and provide advice to the Board.

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Environmental Protection Agency

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Disclaimer

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1. PURPOSE AND GUIDANCE OBJECTIVES

1.1 Introduction

This guidance has been written in the context of Article 27 of the European Communities (Waste Directive) Regulations 2011 (S.I. No. 126 of 2011), as amended (Waste Directive Regulations (2011)) (hereafter referred to as Article 27). Article 27 makes a key distinction between the regulatory regime for substances or objects that are defined as "waste" and those that are instead to be viewed as a "by-product".

The purpose of this guidance is to:

- encourage the prevention of waste including the lawful and beneficial use of by-products; and
- set out the Environmental Protection Agency's (EPA) (hereafter referred to as the Agency) regulatory approach to determining notifications on by-products and to provide guidance to interested parties.

This guidance has two key objectives:

- Provide the reader with guidance on how to assess whether a substance or object is a by-product or a waste; and
- Explain how to submit a complete by-product notification to the Agency which clearly demonstrates compliance with the conditions of Article 27.

The Agency published guidance specific to soil and stone by-products in the context of Article 27 in June 2019 (EPA, 2019).

This guidance provides general guidance on by-product notifications for other materials. Examples of possible 'other material' by-products include, but are not limited to:

- sawdust, shavings and woodchip from untreated timber manufacturing;
- coal ash or pulverised fuel ash (PFA) from coal combustion;
- spent brewers' grains, apple pomace and yeast;
- scrap metal offcuts from a metal production process; and
- whey from the dairy industry.

This guidance develops upon the Guidance on the interpretation of key provisions of Directive 2008/98/EC on waste (EC, 2012) (hereafter referred to as the Commission Guidance, 2012) and the Agency's requirements in relation to by-product notifications.

The Agency will have regard to this guidance when determining, on a case-by-case basis, whether a substance or object meets the conditions of a by-product.

It should be noted that this guidance does not exclude or exempt the need to be fully compliant with all applicable regulatory requirements under waste, planning, environmental, product and other laws.

General enquiries in relation to by-product notifications to the Agency should be made to article27@epa.ie.

1.2 Important Terms and Interpretation

The regulatory regime for by-products is enshrined in Article 5 of the EC Waste Framework Directive (2008)1 and is transposed into Irish legislation by Article 27.

While the definition of waste is set down in Section 4 of the Waste Management Act 1996, as amended, the meaning of this key term is founded upon the Waste Framework Directive (2008) and case law of the Court of Justice of the European Union. In essence, "waste" is defined as something that is discarded or is intended to be discarded or is required to be discarded.

The introduction of Article 27 into Irish waste legislation in 2011 provided a new formal mechanism by which a substance or object, which is a production residue, could be determined not to be a waste but instead a by-product. In accordance with EU and national waste management policies, Article 27 facilitates site operators and owners to avoid unnecessary waste generation, thus supporting the circular economy and *Ireland's waste management policy* (Department of the Environment, Community and Local Government (2012)).

Determining whether a production residue is a by-product, or a waste is undertaken on a case-by–case basis. This is because the circumstances under which both waste and by-products are generated and used can be so varied. Similarly, the associated risks (namely to human health and the environment) may also differ. Examples illustrating this point are outlined later in this guidance note in Section 2.

Key definitions and terms which are applicable to the by-product notification process are explained in Table 1.

Table 1: Key Terms and Interpretation

Term	Interpretation
Waste	Any substance or object which the holder discards or intends or is required to discard. (Waste Framework Directive (2008))
By-product	A by-product is a substance or object, resulting from a production process, the primary aim of which is not the production of that item. (Waste Framework Directive (2008))
Product	All material that is deliberately created in a production process. In many cases, it is possible to identify one (or more) 'primary' products, this or these being the principal material(s) produced. (Commission Guidance, 2012)
Production Residue	A material that is not deliberately produced in a production process but may or may not be a waste. (Commission Guidance, 2012)
Article 27	A provision under the Waste Directive Regulations (2011) that allows an "economic operator" to decide, under certain circumstances, that a material is a by-product and not a waste.
Economic Operator	Not defined in legislation but is generally understood to mean the person or organisation submitting an Article 27 notification (i.e. the notifier).

1 Directive (EU) 2018/851 amends the Waste Framework Directive (2008). At the time of writing, Directive (EU) 2018/851 has not been transposed into Irish Law. Economic operators should however be aware of potential future changes to the law on by-product notifications in Ireland once Directive (EU) 2018/851 has been transposed into Irish Law.

2. DISTINGUISHING BETWEEN PRODUCTS, PRODUCTION RESIDUES, WASTE AND BY-PRODUCTS

2.1 Initial Assessment

A decision on whether or not a particular substance or object (also referred to as the material or secondary material) is a by-product must in the first instance be made by the material producer (or economic operator). In doing so, the material producer (or economic operator) needs to consider the following in relation to their material:

1. Has the substance or object been discarded, or is it required to be discarded, or intended to be discarded? If the answer is 'yes' to any of these**,** then the material is a **waste** and not a by-product.

   For example, the wood used in a manufacturing process has been treated and contains persistent organic pollutants (POPs). The sawdust, woodchip and/or shavings produced by the production process therefore require discarding and are a waste.

2. Was this substance or object intentionally and deliberately produced for a specific use? If the answer is 'yes' then the substance or object is a **product** and not a by-product.

   For example, in the production of wood pallets - the manufacturing process is designed to produce a timber pallet. The timber pallet is therefore a product and not a by-product.

3. Is the substance or object produced as a secondary consequence of the production process i.e. the production process did not directly seek to produce the substance or object. If the answer is 'yes'**,** then the material is a **production residue** and may be a by-product or a waste.

   For example, in the production of wood pallets from untreated wood, the resultant uncontaminated sawdust, woodchip and/or shavings are not the purpose of the manufacturing process. They are production residues that are a result of a production process and have not been intentionally produced. Determining whether a production residue is a by-product or waste requires further consideration and is discussed in more detail in Section 2.2 below.

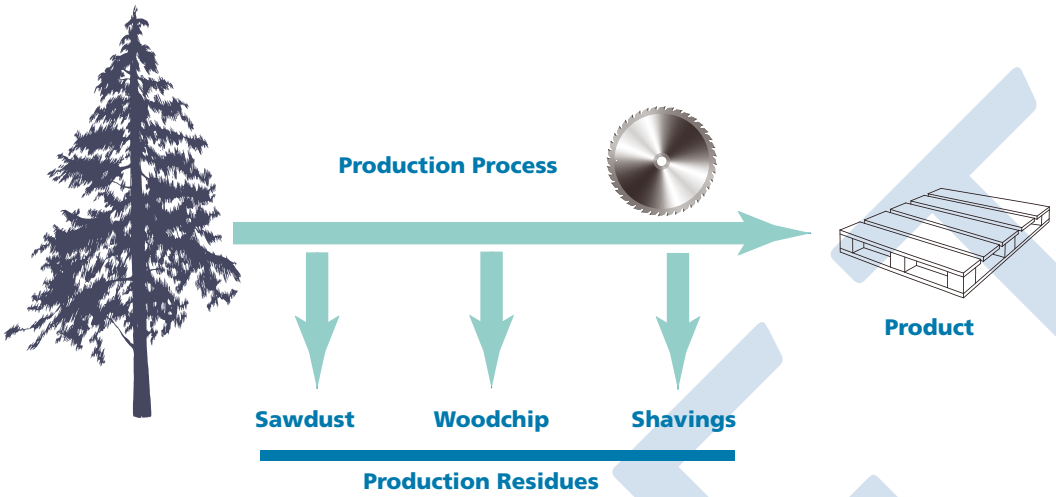

Figure 1: - Example of Production Residues and Products - Timber Manufacturing Process.

Figure 1 illustrates that the sawdust, woodchip and shavings are not being deliberately produced; they are a secondary consequence of the production process, i.e. **production residues**. By contrast, the **product** (i.e. the pallet) is deliberately and intentionally produced by the manufacturer.

A further example to demonstrate the differentiation between a **product** and **production residue** is pulverised fuel ash which results from the combustion of coal in the production of energy as illustrated in Figure 2. By burning the coal as a fuel source, the pulverised fuel ash is produced as an integral or secondary consequence of the combustion (production) process. The ash is driven out with the flue gases from the furnace and subsequently collected to prevent these emissions contributing to air pollution.

The **product** in this instance is electricity. The pulverised fuel ash is a **production residue**. Its generation is not the purpose of the production process (combustion).

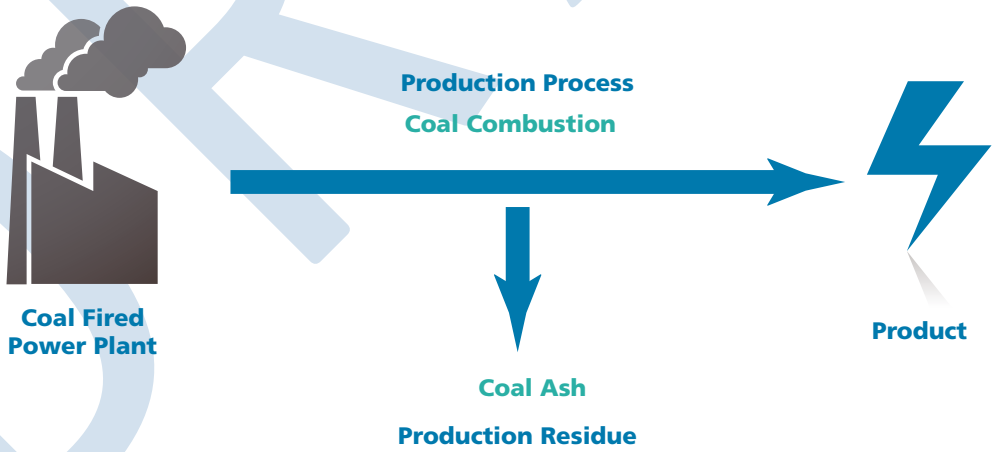

Figure 2: - Example of Production Residues and Products - Power Generation (Coal).

Only a **production residue** can be considered for further assessment as a potential by-product. However, it should be noted that a production residue can constitute a by-product or a waste. Further assessment will be required to be undertaken by the material producer (or economic operator) to determine whether a production residue is a by-product or a waste as set out in Section 2.2 below.

2.2 Determining whether a Production Residue is a By-Product or Waste

The final classification step involves determining whether a **production residue** is a by-product or a waste. For a production residue to be classified as a by-product, the four conditions of being a **by-product** as defined under Article 27 are required to be met. These four conditions are:

1. the further use of the substance or object is certain; (Article 27(1)(a));
2. the substance or object can be used directly without any further processing other than normal industrial practice; (Article 27(1)(b));
3. the substance or object is produced as an integral part of a production process; (Article 27(1)(c)); and
4. the further use is lawful in that the substance or object fulfils all relevant product, environmental and health protection requirements for the specific use and will not lead to overall adverse environmental or human health impacts (Article 27(1)(d)).

In order to be determined a by-product, the material must meet each of these four conditions.

3. MAKING A BY-PRODUCT NOTIFICATION

Once the material producer (or economic operator) has carried out the necessary assessment and decided that a substance or object is a by-product, there is a need to inform the Agency of that decision in accordance with Article 27(2). It is strongly recommended to make a notification of a by-product decision to the Agency in advance of the further use of the substance or object as a by-product; otherwise, if ultimately determined as waste, waste enforcement action may be necessary.

The person making the notification to the Agency i.e. the economic operator (also referred to as the notifier) may be either the material producer or any person/organisation with the consent of the material producer.

Once a notification is made, the Agency will endeavour to provide a determination in all cases which either:

- **Determines to agree** with the decision as notified by the economic operator that the material is a by-product; or
- **Determines** that the material is a waste.

The Agency will take a case-by-case risk-based approach to making determinations. Notifications should be accompanied by the necessary documentation to demonstrate compliance with the four by-product conditions. A good quality, complete notification will allow the Agency to make a determination in the earliest possible time.

A decision tree to assist in the determination of whether the material in question can be classified as a by-product or waste is presented in Figure 3.

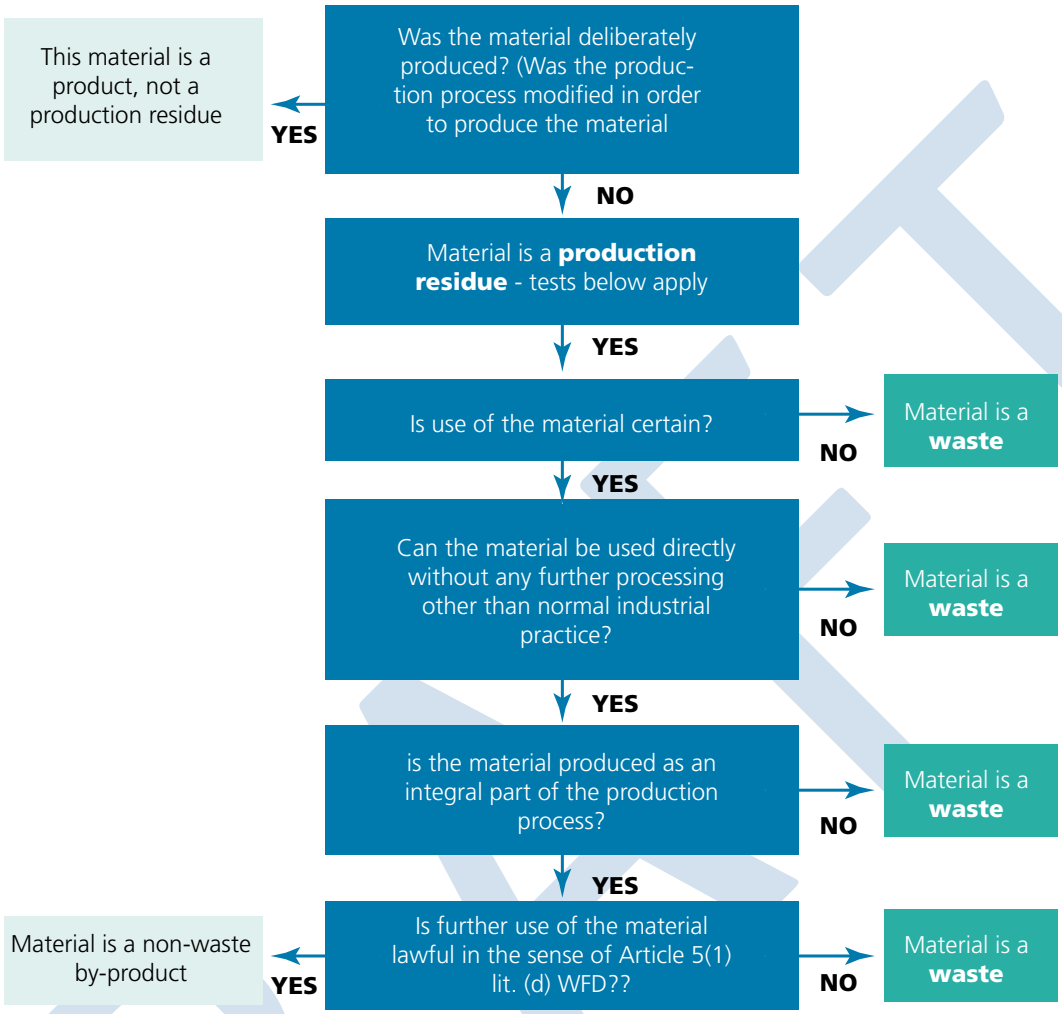

Figure 3: - Decision Tree for Determining Whether a Material is a by-product (EC, 2012).

3.1 Demonstrating Compliance with Article 27(1)(a)-(d)

As detailed in Section 2.2 above, in order to be classified as a by-product the four conditions of Article 27(1) must be met. The sections below explain how to demonstrate compliance with each of the four conditions.

3.1.1 Article 27(1)(a) - Is the Further Use of Material Certain?

If possible, the establishment of **certainty of use** should be done prior to the material's production, as it shows a pro-active approach by the person producing the material. It also indicates that there is a guarantee that the material will be used and thus there is no risk of the material being disposed of as a waste.

A retrospective approach in deciding what to do with the material may also be acceptable if, for example, a market assessment can demonstrate that there is an identified further use. This will require a case-by-case assessment and the duration of storage of the material must be considered. For example, if something is stored indefinitely (i.e. for longer than six months) without a defined use, the material may in fact be a waste.

The requirement for the material and its certainty of use at the end use location(s) must be documented and supported by the necessary evidence in the notification submitted to the Agency. Examples of further use being certain or uncertain include:

Further Use is Certain (EC, 2012)

1. **Existence of contracts between the material producer and subsequent user;**
2. **A financial gain for the material producer;**
3. **A solid market (sound supply and demand) existing for this further use; and**
4. **Evidence that the material fulfils the same specification as other products on the market.**

Further Use is Uncertain (EC, 2012)

1. **There is no market for the material;**
2. **Only part of the material is to be used, with the rest to be disposed of (should be initially treated as waste); and**
3. **The financial gain for the waste holder is nominal compared to the cost of waste treatment.**

3.1.2 Article 27(1)(b) - Can the Material be Used Again Without any Further Processing?

This condition requires confirmation that no further processing of the by-product is required prior to its use. Therefore, if a production residue has to be treated before it can be used, this may indicate that it is being subject to a waste treatment (recovery) operation. Therefore, the material may be a waste.

The use of **'normal industrial practices'** however is not determined as further processing. Therefore, the nature of any processing of the production residue must be adequately documented within the notification to the Agency. Supporting information should be submitted with the notification to demonstrate that it is 'normal industrial practice' for such materials and is a well-used and standard procedure in that particular industrial sector. For example, this may include demonstrating that the same processing steps are undertaken in the production of equivalent (virgin) material(s).

Examples of normal industrial practices include, but are not limited to:

- filtering;
- washing or drying;
- adding materials necessary for further use;
- modification of size and shape (such as crushing); and
- carrying out quality control.

To illustrate this point, we return to the examples of sawdust and pulverised fuel ash previously discussed in Section 2.1.

1. Sawdust is a production residue produced from the production of wooden pallets from untreated wood. The uncontaminated sawdust (production residue) can be used, without further processing, as animal bedding.
2. Similarly, the pulverised fuel ash is a production residue produced when it is removed from flue gases, during the production of energy (the product) from coal combustion. At the end of the production process, the pulverised fuel ash may be suitable for use directly without further processing in the same way as other aggregates in the manufacture of construction products.

3.1.3 Article 27(1)(c) - Is the Material Produced as an Integral Part of a Production Process?

In order for a substance or object to be considered a by-product, it must be produced as an integral part of the production process from which it arises. i.e. the production process cannot be undertaken without producing that substance or object.

To illustrate this point, we return to the examples of sawdust and pulverised fuel ash discussed in Section 2.1.

1. Sawdust is a production residue produced as an integral part of a production process that manufactures wooden pallets from untreated wood.
2. Similarly, the pulverised fuel ash is a production residue produced when it is removed from flue gases using electrostatic precipitation to prevent emissions to air, during the production of energy (product) from coal combustion.

Demonstrating that a material is produced as an integral part of a production process can be, in some cases, as simple as describing the production process. Process flow diagrams can also be useful. Providing details of relevant reference documents such as Best Available Techniques (BAT) and BAT Reference documents (BREF) may assist in demonstrating that the notified by-product is commonly produced as an integral part of that production process.

3.1.4 Article 27(1)(d) - Is the Proposed Further Use Lawful?

This condition requires that any by-product notified to the Agency will have its further use clearly identified and that all relevant product, environmental and human health protection requirements relating to that use will be met.

In most cases demonstrating compliance with this condition will follow a two-step process:

1. Demonstrating that the further use is lawful i.e. that the further use of the material holds an authorisation and/or that the material meets the technical requirements (all relevant specifications, standards and legislation) applicable to products relevant to its further use; and
2. Demonstrating that the further use of the by-product will not lead to overall adverse environmental or human health impact.

In some cases, demonstrating that the material meets the same technical requirements as the "virgin" product(s)/ primary material(s) that it replaces will be sufficient to show that there will not be overall adverse environmental or human health impact from the further use of the by-product.

3.1.4.1 Demonstrating Lawfulness

Lawfulness may be demonstrated by one or more of the following:

- Evidence of appropriate authorisation for the proposed further use;
- Compliance with technical requirements specific to the proposed use of the material; and/or
- Compliance with product regulation.

Each of these are explained in detail in the following paragraphs.

Evidence of authorisation for the proposed further use

Lawfulness may be demonstrated by providing evidence that the specified further use of the material is provided within some form of authorisation. Examples of such authorisation may include, but are not limited to, planning consents (including Section 5 declarations of exemption from planning), permits, licences, certificates of registrations/ authorisation etc.

For example, a planning consent may authorise the raising of ground levels at a development. This can be evidence to the Agency that the further use process is lawful.

A further example to demonstrate the point is a licence (e.g. industrial emissions or waste) allowing for the burning of specified materials (e.g. untreated wood) in a combustion plant to produce energy.

Relevant information pertaining to the specified use and/ or material in the authorisation should be extracted, highlighted and submitted to the Agency with the notification as evidence of lawfulness.

Where there is no authorisation for the further use of the material, it may be necessary to demonstrate the material complies with the technical requirements specific to the proposed use of the material. Where authorisation is in place, in many cases it will also be necessary to comply with the technical requirements for the proposed use of the material.

Technical Requirements

The term technical requirement is used to convey all relevant standards, specifications and legislation applicable to the material (by-product).

Firstly, in order to identify the relevant technical requirements to your material (by-product) you should confirm that the equivalent "virgin" product(s)/ primary material(s) that is being replaced by your material is:

- a whole product;
- a component of a new product; or
- a new material and therefore not replacing anything.

You should also confirm the end use scenario(s) which should be relatively specific. In the case of land spreading materials, it is not enough to say 'fertiliser', you need to specify what fertiliser e.g. Triple Super Phosphate. In terms of potential human health and environmental risks, details of the use(s) are crucial. For example, if the material is returned to a manufacturing process (e.g. pulverised fuel Ash in concrete manufacturing) or applied directly in the environment (e.g. as a fertiliser) its use is likely to be regulated by other legislation. If you have more than one intended use for the by-product material, you need to provide details of them all, including the technical requirements that relate to each use.

Secondly, confirm the relevant technical requirements applicable to the primary material (product) being replaced, where relevant. It is possible that you have developed a new material and/or use and therefore the material may not have any existing technical requirements. This does not mean that your material cannot be a by-product. In this case, you will need to demonstrate the customer specification(s) that exists and confirm that it is an appropriate technical requirement to control the quality of the material.

Preferably, you should identify a national or international published standard, for example an ISO standard(s) or Publicly Available Specifications (PAS) and applicable legislation that sets out the technical product requirements. These may for example include requirements relating

to the composition of the material (e.g. concentration ranges for specified elements) and/or physical or engineering requirements (e.g. moisture content or strength). You will need to comply with all the requirements of the selected standard or specification, and you cannot pick and choose elements.

Whether or not a published standard, specification and/or legislation is relevant, each potential application of the material is likely to have specific customer requirements defining the material characteristics. Any such customer requirements cannot replace or 'water down' requirements in a published standard, specification and/or legislation and would be expected to be additional or more stringent.

Customer specifications are bespoke technical requirements. If you seek to rely wholly or partly on customer specifications, the Agency would scrutinise these to assess whether they are sufficiently robust to protect human health and the environment. Good indications to the Agency that the customer specifications are robust may, *inter alia*, include:

- the status of the company, companies or industry body that has developed the customer specification;
- the status of the parties that have been consulted with to develop the specification; and
- the methodology used to develop the specification, e.g. whether it is based in part on a PAS(s) and/or primary research carried out by respected organisations.

You must provide evidence to demonstrate that the by-product meets the relevant product standard, legislation requirements and/or specifications, and any other specification comprising your technical requirements, and any differences. Differences between the technical requirements and the quantified composition or performance of your by-product can be negative (e.g. the risk of a specific contaminants being present in the by-product material that are not commonly found in primary material in which it replaces) but may also be positive (e.g. a physical characteristic of the by-product material that is preferable to the commonly used primary material). Positive differences may help you to provide evidence of the benefits that using the by-product material will provide in comparison to primary materials.

Many published standards will define the tests that are required to demonstrate conformity and may even define the sampling requirements. In that case, you need to provide evidence, as per tests set out in the standard, that demonstrates that the material fulfils the technical requirements for the specific purpose.

If neither a published standard, specification, applicable legislation nor customer specification exists with the relevant scope, for example because you have developed a new material and/or use, it may be possible for you to develop your own bespoke technical requirements. These will be based on the risks associated with the storage, transport, processing and use of your material. In this case, you need to carry out a risk assessment in parallel with the development of your technical requirements.

It is essential that any notification submitted to the Agency provides relevant supporting information or evidence including technical requirement and analytical reporting to demonstrate compliance with relevant technical requirements. If technical requirements cannot be met, this may indicate that the intended further use of the by-product is unlawful, which then does not satisfy one of the conditions of being a by-product.

Product Regulations

Your 'by-product' may also be subject to product regulations and controls. The following are common examples; however, you should review whether any other controls apply to your circumstances. Your notification should specify which product regulations apply to your material and detail how these shall be complied with.

CE Marking

https://europa.eu/youreurope/business/product-requirements/labels-markings/ce-marking/index_en.htm

https://ec.europa.eu/growth/content/ce-marking-construction-products-step-step-guide-now-available-all-eu-languages-0_en

Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH Regulation) (Chemical Products)

https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1436265231260&uri=CELEX:32006R1907

Classification, Labelling and Packaging of Substances and Mixtures (CLP Regulation) (Chemical Products)

https://eur-lex.europa.eu/legal-content/en/ALL/?uri=CELEX:02008R1272-20190726

Persistent Organic Pollutants Regulation (POPs Regulation)

https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32019R1021&from=EN

European Communities Chemicals Act (Control of Major Accident Hazards Involving Dangerous Substances) Regulations 2015 (S.I. No. 209 of 2015) (the "COMAH Regulations")

http://www.irishstatutebook.ie/eli/2015/si/209/made/en/print

3.1.4.2 Demonstrating No Overall Adverse Environmental or Human Health Impacts?

This part of the condition requires that the use of the substance or object will not lead to overall adverse environmental or human health impact.

Given the range of industries/ sectors from which by-products may arise, very different environmental and human health impacts and considerations will exist around their further use. Therefore, there is a need to demonstrate that the material will not lead to adverse environmental or human health impacts for the specific use.

There are a number of ways in which no overall adverse environmental or human health impacts can be demonstrated including:

- Demonstrating the technical requirements are fulfilled as set out in Section 3.2.4.1 above, provided it can be demonstrated that these requirements provide sufficient human health and environmental protection; or
- Using a comparator to support your assessment; or
- Undertaking an environmental and human health risk assessment.

Further details on the "using a comparator" approach and undertaking an environmental and human health risk assessment are provided in Appendix 1.

3.2 How to Notify

1. Prior to submitting a by-product notification, the notifier should read this guidance and any supplementary information placed on the Agency's website: http://www.epa.ie/waste/wastereg/byprod/
2. The notification must be made via the EDEN portal[2]: www.edenireland.ie. First time users of the EDEN portal will need to create a user login account using the "Sign Up" option, and follow the instructions provided. Access to the 'Article 27 module' must also be requested upon registration.
3. Users are only required to register once for EDEN, after which they can log in via the EDEN portal to launch the 'Article 27 module' when needed and notify the Agency of their by-product decisions. There are user instructions in the 'Help' section of the EDEN portal site in addition to a dedicated email address for any further queries: eden@epa.ie.
4. Once logged in, each notifier must complete the online by-product notification form and provide sufficient supplementary information in support of their decision.
5. Relevant further information which should be uploaded in support of the notification includes (but is not limited to):
    - Contract agreements between the material producer (or economic operator) and end user;
    - Description of the production process e.g. Process Flow Diagrams;
    - Discussion on potential for contaminants to be present within the secondary material resultant from the production process from which it arises and how these would compare to potential impurities in an equivalent primary material;
    - Estimated volumes of material to be generated and details of associated calculations/estimations;
    - Further details of end use(s) including use location(s)/scenario and potential use limitations;
    - Environmental analysis of the material and comparison against applicable technical requirements;
    - Comparator or environmental and human health risk assessments;
    - Any other evidence demonstrating no overall adverse environmental or human health risk;
    - Evidence of lawfulness e.g. relevant sections of a planning consent or EPA licences (e.g. Industrial Emissions licence), permits, management plans (i.e. nutrient management plan);
    - Any clarifications deemed necessary for information provided within the notification form; and
    - Any other information deemed relevant to the Agency's decision making.

2 EDEN is an online web portal for local authority and waste licensee holders to communicate with the Agency

3.3 Timelines and Consultation

The Agency may consult with the economic operator to clarify matters should there be any doubt about the notification's compliance with any of the four conditions.

If the Agency determines that the notified by-product is a waste, the economic operator will be informed of their decision and the waste enforcement regime may instead apply, particularly if the waste has been moved to the end use location.

Figure 4 below illustrates the steps associated with the notification process.

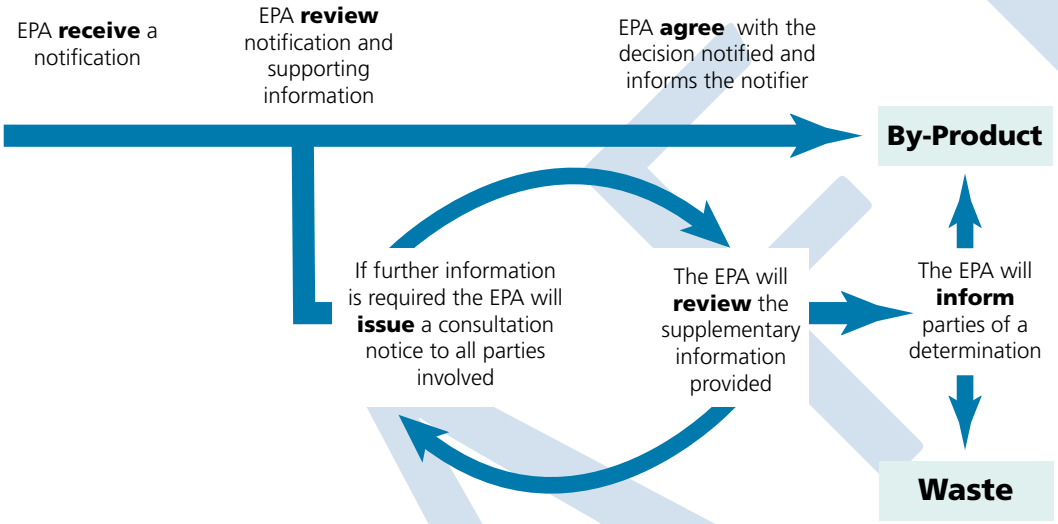

Figure 4: - Notification Steps

The review of a by-product notification is considered on a case-by-case basis by the Agency.

Should the Agency consider that consultation is required as part of its consideration of the notification, a consultation notice will be issued to all parties listed on the notification, including the relevant local authority (planning and environment sections) and other relevant representatives as necessary.

Any information received in response to the Agency's request will be circulated to all parties who were initially consulted as well as any other relevant parties identified by the Agency.

The consultation process will continue, as far is considered to be reasonable, until enough information is provided to allow the Agency to make a determination. The consultation process and assessment/ determination process may cease if a notifier requests the notification be withdrawn, provided that no material has been moved or used under the said notification.

It is recommended that notifiers provide all the required information at the time of submission. Doing so will prevent any unnecessary delays in the Agency's determination.

The Agency advises that any substance or object which is the subject of a by-product notification should not be used until a determination has been made by the Agency.

References

Department of the Environment, Community and Local Government (2012), "*A Resource Opportunity – Waste management policy in Ireland*"[3], https://www.epa.ie/pubs/reports/waste/plans/Resource_Opportunity2012.pdf

European Commission (2012), Guidance on the Interpretation of Key Provisions of Directive 2008/98/EC on Waste, https://ec.europa.eu/environment/waste/framework/pdf/guidance_doc.pdf .

Environmental Protection Agency (2019), Guidance on Soil and Stone By-products, Version 3, www.epa.ie/pubs/advice/waste/product/Guidance_on_Soil_and_Stone_By_Product.pdf).

Environmental Protection Agency (Undated web page), By-Product Decisions and Notifications Made under Article 27, https://www.epa.ie/waste/wastereg/byprod/.

(Waste Directive Regulations (2011), European Communities (Waste Directive) Regulations 2011 (S.I. No. 126 of 2011), www.irishstatutebook.ie/eli/2011/si/126/made/en/print.

Waste Framework Directive (2008), Directive 2008/98/EC of the European Union Parliament and of the Council of 19 November 2008 on Waste and repealing certain Directives (consolidated version),

https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:02008L0098-20180705&from=EN.

Waste Management Act, Waste Management Acts 1996-2019 (consolidated version). http://revisedacts.lawreform.ie/eli/1996/act/10/revised/en/html .

Appendix 1- Guidance on Undertaking a Risk Assessment - Demonstrating no Overall Adverse Impacts During Use

1. Introduction

Ensuring that there will not be any overall adverse impacts on human health and the environment is fundamental to any regulatory determination on an article 27 by-product notification. Overall, the material producer (or economic operator) and the Agency need to consider if the product legislation, which would apply to by-products, is sufficient to adequately minimise the environmental or human health impacts.

To enable a decision, it is necessary for the material producer (or economic operator) to demonstrate that the material (by-product) will not cause overall adverse impacts. Article 27 requires that the use of the substance or object will not lead to "*overall adverse environmental or human health impacts*."

There are a number of ways in which no overall adverse environmental or human health impacts can be demonstrated including:

- Demonstrating that the technical requirements provide sufficient human health and environmental protection; a useful description of relevant technical requirements is set out in a separate guidance document Part 2: Preparing an End-of-Waste Application (Section 3.2.4.1);
- Using a comparator to support your assessment; or
- Undertaking an environmental and human health risk assessment.

Guidance on the "using a comparator" approach and undertaking an environmental and human health risk assessment are provided below.

1.1 Using a comparator

The approach set out in Article 27 allows a by-product material, to be used without having to substitute or be compared to a virgin 'comparator' material, i.e. there is no specific need to demonstrate that use of the material would not lead to higher environmental or human health risks than the comparator material. However, there is a requirement to demonstrate there will be no overall adverse environmental or human health impacts from further use of the by-product material.

The Agency recognises that article 27 by-product notifications may benefit from consideration of a virgin (primary), 'comparator' material. This approach may support an appropriate risk assessment and enables material producers (or economic operators) to refer to published data for comparator materials to support their notification.

Using the comparator approach allows your material to be benchmarked against existing products and market uses, which may be helpful in demonstrating no overall adverse environmental or human health impacts. A comparator can also help ascertain whether further analysis of your material is required.

If a comparator is to be used, there must be an appropriate comparator material for the same end use. It is also important to be able to demonstrate that the correct comparator material has been chosen for the assessment. Factors to consider when choosing the right comparator material include:

- Is there a comparator material with the same end use, or are you supplying or using the by-product in a unique market;
- What material specifically are you replacing? Comparator material sub-types should be considered, for example:
  - In the case of land spreading materials, it is not enough to say 'fertiliser', you need to specify what fertiliser e.g. Triple Super Phosphate;
- There should be sufficient evidence to support a comparison exercise, based on the evaluation of composition and physical characteristics of the comparator material against your by-product material; and
- You should select the comparator material with the most similar composition and physical characteristics, including relevant physical and chemical parameters which may include:
  - physical properties, such as bulk density and particle size distribution;
  - compositional analysis;
  - calorific value;
  - composition (moisture content etc.);
  - elemental analysis;
  - metals;
  - organic contaminants; and,
  - others.

Once a suitable comparator material has been identified, a parallel comparison of the relevant parameters for both materials should be undertaken to highlight any differences between their physical and chemical characteristics. This comparison should refer to the relevant technical requirements, which should be common for both materials. This 'side-by-side' assessment should consider the potential impacts on the environment and human health from the end use of both materials to explain why the properties of your by-product material will not lead to an unacceptable risk.

1.2 Undertaking an Environmental and Human Health Risk Assessment

You can complete a risk assessment to support your assessment, including when:

- There is no suitable comparator (e.g. the material will be sold into a unique market or application);
- You have multiple comparators; or
- There are potentially additional risks from your material (versus a comparator).

You may wish to use a suitably qualified advisor to support you in the development of the risk assessment. Undertaking a risk assessment can be a complicated process requiring expert knowledge and experience. This document seeks to guide you in what is required in a risk assessment; however, it should be noted that because the material types for which the Agency may receive article 27 by-product notifications on are not limited, it is only possible to give generic guidance in this document.

A tiered assessment approach is typically used. This allows non-risks to be screened out early to prevent unnecessary further evaluation at the later stages.

- **Tier 1 – Risk screening:** Develop an outline conceptual model, identifying the source-pathway-receptor model and the presence of any pollution linkages (the purpose of tier 1 is to establish whether there is any potential for unacceptable risks).
- **Tier 2 – Generic quantitative risk assessment:** Use the conceptual model and generic assessment criteria applicable to a range of scenarios, if available, to identify potentially unacceptable risks.
- **Tier 3 – Detailed quantitative risk assessment:** Requires more complex risk modelling tools and the generation of more detailed data to characterise the scenario, material and receptors under consideration.

For many by-product assessments, the initial risk screening (tier 1) and generic quantitative risk assessment (tier 2) is likely to be sufficient. It will however be necessary to progress to a tier 3 assessment in more complex situations where it cannot be established in the tier 1 and tier 2 assessments that there is no significant risk. In a tiered approach, the characterisation of risk is an iterative process, which becomes more complex as conservatism and uncertainty decrease and you progress up the tiers of assessment if this is determined to be necessary. The intensity of effort in performing the assessment is therefore relative to the complexity and the likelihood of the identification of risks.

Potential risks to the environment and human health may result from the physical, chemical and biological properties of your material and its use in a specific way. Therefore, your risk assessment must consider both the application scenarios (intended end uses of the material) as well as its material characteristics.

This guidance seeks to enable you to understand and interpret the risk assessment process and results if you choose to appoint a suitably qualified advisor to undertake a risk assessment on your behalf. The information includes guidance to help you undertake a tiered risk assessment.

Other useful sources which may help you to develop your risk assessment include:

- EPA 2013 Guidance On The Management Of Contaminated Land And Groundwater At EPA Licensed Sites (https://www.epa.ie/pubs/advice/waste/contaminatedland/contaminatedland/);
- EPA 2007 Code of Practice: Environmental Risk Assessment for Unregulated Waste Disposal Sites (https://www.epa.ie/pubs/advice/waste/waste/codeofpracticeenvironmentalriskassessmentforunregulatedwastedisposalsites.html);
- Environment Agency (UK) guidance on Land Contamination: Risk Management (https://www.gov.uk/guidance/land-contamination-how-to-manage-the-risks/stage-1-risk-assessment); and
- CL:AIRE Water and Land Library (https://www.claire.co.uk/information-centre/water-and-land-library-wall).

Tier 1: Risk Screening

Risk screening is a process that will determine whether use of your material represents or potentially represents a risk(s) to receptors. It also identifies possible source-pathway-receptor linkages through the development of a conceptual model. It provides a preliminary or qualitative risk assessment of your material under end use scenario(s). It includes an assessment of the likelihood and magnitude of any effects of each pollutant linkage.

The **source-pathway-receptor** approach to risk assessment is recommended as a universally accepted methodology for the assessment of risks to the environment and human health and can typically be completed as a desk study. Without all three components – source-pathway-receptor – there is no pollutant linkage and therefore there can be no risk.

The following provides guidance in 4 steps to help you to undertake a tier 1 risk assessment.

- **Step 1:** Identify the potential hazards in your material
- **Step 2:** Identify your application scenarios (intended end uses of the material)
- **Step 3:** Develop a conceptual model
- **Step 4:** Summarise risks to the environment and human health to determine any likely adverse impacts

Step 1: Identify the potential hazards in your material

This step will involve **data gathering** to support your risk assessment. This is a key initial step which can be time consuming. However, this information may enable you to screen out risks, so should be undertaken at an early stage in the process to avoid completing further tiers unnecessarily.

You should gather data or information about the physical and chemical composition of your material and its hazard profile, as well as the physicochemical and biological (if applicable) properties of the material under consideration, with secondary reference to the likely use. This should include consideration of the following:

- Broad literature review;
- Previous risk assessments;
- Manufacturers / producers; and
- Use of your composition analysis to identify potential risks, since not all components may be found in literature.

The outputs from the hazard screening exercise can be presented as a table identifying the chemicals and the potential hazards they present in reference to a specific use, along with full references. This should also include an audit trail, for example providing search criteria and dates on which you accessed documents.

Step 2: Identify your application scenarios (intended end uses of the material)

Your end use scenarios will be relatively specific (for example, application to agricultural land as a fertiliser). You should take care to **define the characteristics of each end use** in a way that adheres to the principles of the tiered assessment, specifically that they are generic and represent a realistic or 'reasonable worst-case' conditions.

You should first detail how the material is used in the application scenario, for example:

- Indoors or outdoors;
- Bound or unbound (e.g. secondary aggregates);
- Exposed to the elements or covered (if so, with what? Is the cover material permeable or impermeable to liquids and/or gas?);
- Is the material used at 100% concentration or blended with other materials (if so, what are they? Each blend may represent a separate use scenario);
- If applied to land is it above or below the water table (in the saturated zone or not); and
- The standard(s)/ specifications that apply to the application.

Are there any other possible uses other than those that you propose for the material? These could pose a risk and so should also be considered. **Identify every separate scenario**. Each intended use scenario needs to be assessed in order to be included in your by-product notification. You should also clearly state if your product is not suitable for certain use scenarios and specify the reasons for this.

Once an end use scenario is identified, it should then be possible to assess the likelihood of potential risks for the hazards identified. For example, a chemical might have been identified as presenting a potential hazard in the material, but if the chemical is readily degradable under the conditions of the end use scenario, then the source to receptor pathway may not be present (if there is no source, pathway or receptor, there is no risk).

Step 3: Develop a conceptual model

You need to **develop a conceptual model for each use scenario**. This means, placing the use of your material in the context of its environment to identify pollutant linkages between the sources (the hazards identified in step 1), pathways and receptors. Because the conceptual model will be generic for each end use scenario, rather than being a site-specific assessment, it should be represented by realistic or 'reasonable worst-case' conditions.

This is an essential step to help you (and the Agency, as the assessor) to understand the risks associated with your proposals by helping you to **identify pollutant linkages** between the sources, pathways and receptors. It can help identify risks which may not have been considered, and crucially, it can also help you to rule things out.

You are seeking to identify routes (pathways) via which any component of the material, within its use scenario, can reach any receptor. If there is no pathway there is no risk and hence no need for further assessment.

Your conceptual model should apply lifecycle thinking to identify all potential direct and indirect human health and environmental impacts on all receptors (environmental media), namely:

- Air (including indoor, workplace and outdoor air);
- Water (ground water and surface water, including runoff, drainage and sewer effluent);
- Soil (including sediments, fill material and other geologic material); and
- Living organisms (people, animals and plants).

Impact on human health should include consideration of potential food chain pathways as well as other direct and indirect exposure by consumers or workers from use or handling (e.g. via an ingestion, inhalation or dermal contact pathway) of the product. This could include exposure to a toy or to buildings constructed from recovered materials, or occupational exposure using the material in the factory to manufacture a final product.

Assessors may not be familiar with your processes and end use, so a visual aid is helpful in the form of:

- diagrams;
- tables;
- matrices; and/or
- written descriptions.

It should be noted that the conceptual model should be refined as you progress through the further tiers and stages. It will form the basis of your assessment and will help you evaluate the risks correctly.

Step 4: Summarise risk to environment and human health to determine any likely adverse impacts

The overall purpose of a tier 1 assessment is to screen out hazards where the possibility of an overall adverse effect on the environment or human health is so low that it can be ruled out as a possibility. Further assessment is therefore not required. A hazard may be ruled out at the tier 1 stage because it has been determined (step 3) that there is no pollutant linkage. For example, the receptor is not vulnerable to the hazard or there is no pathway.

Step 4 should include a summary of the findings of your tier 1 risk assessment, qualitatively assessing the risks to **decide whether there is a likelihood of harm or pollution**. This should include conclusions on whether pollutant linkages exist, the likelihood of harm or pollution associated with those pollutant linkages and whether further risk assessment is required in order to quantify potential adverse impacts to human health and the environment.

Tier 2: Generic Quantitative Risk Assessment

Generic quantitative risk assessment is typically undertaken by comparing the hazard component (concentrations) against published generic assessment criteria (GAC) (or generic screening levels).

GAC criteria are derived using generic assumptions about the characteristics and behaviour of contaminants (sources), pathways and receptors. These assumptions will be protective in a range of defined conditions and represent concentrations below which impact on receptors (human health, water-dependent ecosystems, etc.) is very unlikely. GAC criteria are useful for screening and quantification purposes. For example, leachate concentrations that are found to exceed groundwater GAC are an indication of potential risk to receptors and therefore this requires a detailed quantitative risk assessment (tier 3) to be undertaken.

When applying a generic quantitative risk assessment, the risk should be assessed for each pollutant linkage. The assessment should include simple assessments of the predicted impact of the hazard on all the receptors. The GAC must be:

- Authoritative and scientifically based;
- Relevant and appropriate for the site;
- Conservative and protective (assuming a worse-case scenario); and
- Not site specific.

For each hazard, the starting point for estimating its impact on the environment or human health is a sound understanding of the chemical levels in the material and the end use scenario. Where **there is published evidence** of the outcome of the application of these materials in a relevant end use scenario, this evidence can be used to make a comparison with the screening assessment criteria recognised for each identified receptor. If **there is no such published evidenc**e, the emission of chemicals into the environment and the resulting chemical concentrations in different environmental media will need to be estimated or modelled and compared against relevant assessment criteria for each identified receptor to determine whether there will be adverse impact under a tier 3 assessment.

Under European and national environmental legislation, the Republic of Ireland is required to implement the measures necessary to prevent hazardous substances from entering soil, water (including groundwater and surface water) and air. Relevant assessment criteria for impacts on the environment can be identified with reference to such environmental legislation. Values for screening of the impact may come from several sources, including the European Communities Groundwater Threshold Values (GTVs)[4], the EPA's GTVs[5], the EPA's Interim Guideline Values (IGVs)[6] when considering a groundwater receptor, or relevant Environmental Quality Standards (EQS)[7] when considering a surface water receptor, or Drinking Water Standards (DWS)8 when considering drinking water as a pathway for receptors. The EPA Guidance on the Authorisation of Discharges to Groundwater9 should also be considered when assessing impact or potential impacts on groundwater resources.

GAC allow the magnitude of reported contamination to be put in context and help screen out concentrations that are not elevated from those that are presented in the GAC. This provides a short list of contaminants/chemicals of potential concern, that will be required to be taken forward for detailed quantitative risk assessment (tier 3). Useful links to detailed technical guidance on assessing risks to specific receptors (e.g. human health, water environment, ecosystems, buildings and structures, risks from gases and vapours, etc.) are available on the CL:AIRE Water and Land Library[10].

10 https://www.claire.co.uk/information-centre/water-and-land-library-wall

If **a screening assessment criterion is not available** for a combination of a chemical and a receptor, it is potentially possible to derive an informal value for the specific assessment, however this often requires expert knowledge and may be costly. You should also consider whether the absence of an assessment criterion may indicate that a pathway is unlikely or that the hazard to a specific receptor is low e.g. aquatic guidelines may not have been established for chemicals that are insoluble in water as they are unnecessary.

To assess whether there will be an adverse impact on human health, concentrations in the materials should be compared against Health Criteria Values (HCVs)[11]. Risk can be characterised by comparing exposure defined by estimated chemical intakes by adults and children with HCVs that define acceptable or tolerable intakes derived from toxicological studies.

If the representative hazard concentrations are all below the GAC/ HCVs then the risk is deemed to be acceptable and no further action is required, so long as the appropriate assessment criteria were correctly applied in the first instance. If the representative hazard concentrations are greater than the GAC then the risk may be unacceptable, and it may be necessary to carry out detailed quantitative risk assessment (tier 3).

An exceedance of a screening criterion identifies the need for further assessment (tier 3) but it does not necessarily imply that there is an unacceptable level of risk. For example, a tier 2 assessment is considering the potential for an overall adverse effect to arise from leachable chemicals that are present in a material reaching a surface water receptor. This could involve comparing the results from a standard leach test (for example, the 90th percentile at a liquid to solid ratio of 0.1 or 0.2) with the respective assessment criterion. If any chemicals show an exceedance in tier 2, it is necessary to assess them further in a tier 3 assessment. In tier 3, the same leach test results could be used, adjusted for 'realistic worst-case' dilution of the leachable chemicals in the receiving watercourse. This applies a lower level of conservatism but requires the dilution to be modelled.

The conclusion of your generic quantitative risk assessment should include a summary of the findings of your tier 2 risk assessment including whether pollutant linkages exist, the likelihood of harm or pollution associated with those pollutant linkages and whether further risk assessment is required in order to quantify potential adverse impacts to human health and the environment. In addition, the conceptual site model developed under tier 1 should be refined.

11 HCVs are 'guidance levels' that allow the risk to human health to be determined for defined scenarios. They include levels that are relevant to different types of exposure, including inhalation values (e.g. OELs 'Occupational Exposure Levels') and oral values (ingested dose, e.g. TDI 'Tolerable Daily Intake').

Tier 3: Detailed Quantitative Risk Assessment

If the tier 2 generic quantitative risk assessment has indicated that there is a potential risk to a receptor from an identified hazard, you should progress to a tier 3 risk assessment for that particular hazard and receptor where it has been identified that there could be an adverse effect. Tier 3, if required, generally requires more complex risk modelling tools and the generation of more detailed (less conservative still) data to characterise the scenario, material and receptors under consideration. Specialist advice is likely to be required when moving to tier 3.

A detailed quantitative risk assessment requires that specific assessment criteria be developed. These specific assessment criteria may relate to end use-specific or site-specific criteria. The representative hazard concentrations are compared to the specific assessment criteria. Specific assessment criteria are derived using detailed data on the contaminant (e.g. chemical form), pathway (e.g. attenuation rates), and receptor (e.g. time on site). The specific assessment criteria are usually more onerous than GAC and only apply to the end use they were developed for. Each individual receptor is modelled e.g. human health, groundwater, surface waters, ecology etc. Different risk assessment modelling tools are available as well as numerical groundwater flow models, numerical contaminant fate and transport models and other receptor specific models.

The EPA recommends that where risk assessment modelling is required, models which have been benchmarked by the UK Environment Agency as part of CLR 11[12] are used. It should be noted that accredited risk assessment tools and models should only be used by suitably qualified/experienced practitioners and should be selected and deployed with careful consideration to Ireland's specific geology and hydrogeology. Justification should be provided for any model being used.

Due to the varied nature of potential by-product materials, uses and potential impacts, it is not possible to provide comprehensive guidance in this document on specific methods for tier 3 detailed quantitative risk assessments and reiterate that specialist advice should be sought if necessary.

The conclusion of your detailed quantitative risk assessment should include a summary of the findings of your tier 3 assessment including whether pollutant linkages exist, and the likelihood of harm or pollution associated with those pollutant linkages. In addition, the conceptual site model developed under tier 1 and tier 2 should be refined and finalised.

AN GHNÍOMHAIREACHT UM CHAOMHNÚ COMHSHAOIL

Tá an Ghníomhaireacht um Chaomhnú Comhshaoil (GCC) freagrach as an gcomhshaol a chaomhnú agus a fheabhsú mar shócmhainn luachmhar do mhuintir na hÉireann. Táimid tiomanta do dhaoine agus don chomhshaol a chosaint ar thionchar díobhálach na radaíochta agus an truaillithe.

Is féidir obair na Gníomhaireachta a roinnt ina trí phríomhréimse:

Rialáil: *Déanaimid córais éifeachtacha rialaithe agus comhlíonta comhshaoil a chur i bhfeidhm chun torthaí maithe comhshaoil a sholáthar agus chun déileáil leo siúd nach gcloíonn leis na córais sin.*

Eolas: *Soláthraímid sonraí, faisnéis agus measúnú comhshaoil atá ar ardchaighdeán, spriocdhírithe agus tráthúil chun bonn eolais a chur faoin gcinnteoireacht ar gach leibhéal.*

Abhcóideacht: *Bímid ag saothrú i gcomhar le grúpaí eile chun tacú le comhshaol atá glan, táirgiúil agus cosanta go maith, agus le hiompar a chuirfidh le comhshaol inbhuanaithe.*

Ár bhFreagrachtaí

Ceadúnú

Déanaimid na gníomhaíochtaí seo a leanas a rialú ionas nach ndéanann siad dochar do shláinte an phobail ná don chomhshaol:

- saoráidí dramhaíola (*m.sh. láithreáin líonta talún, loisceoirí, stáisiúin aistrithe dramhaíola*);
- gníomhaíochtaí tionsclaíocha ar scála mór (*m.sh. déantúsaíocht cógaisíochta, déantúsaíocht stroighne, stáisiúin chumhachta*);
- an diantalmhaíocht (*m.sh. muca, éanlaith*);
- úsáid ghlanscartha agus scaoileadh rialaithe Orgánach Géinmhodhnaithe (*OGManna*);
- foinsí radaíochta ianúcháin (*m.sh. trealamh x-gha agus radaiteiripe, foinsí tionsclaíocha*);
- áiseanna móra stórála peitril;
- doirtí fuíolluisce;
- gníomhaíochtaí dumpála ar farraige.

Forfheidhmiú Náisiúnta i leith Cúrsaí Comhshaoil

- Clár náisiúnta iniúchtaí agus cigireachtaí a dhéanamh gach bliain ar shaoráidí a bhfuil ceadúnas ón nGníomhaireacht acu.
- Maoirseacht a dhéanamh ar fhreagrachtaí cosanta comhshaoil na n-údarás áitiúil.
- Caighdeán an uisce óil, arna sholáthar ag soláthraithe uisce phoiblí, a mhaoirsiú.
- Obair le húdaráis áitiúla agus gníomhaireachtaí eile chun dul i ngleic le coireacht chomhshaoil trí chomhordú a dhéanamh ar líonra forfheidhmiúcháin náisiúnta, díriú ar chiontóirí, agus maoirsiú a dhéanamh ar fheabhsúchán.
- Rialacháin maidir le Dramhthrealamh Leictreach agus Leictreonach (WEEE), le Srian ar Shubstaintí Guaiseacha (RoHS) agus ar shubstaintí ídíonn an ciseal ózóin.
- An dlí a chur orthu siúd a bhriseann dlí an chomhshaoil agus a dhéanann dochar don chomhshaol.

Bainistíocht Uisce

- Monatóireacht agus tuairisciú a dhéanamh ar cháilíocht aibhneacha, lochanna, uiscí idirchreasa agus cósta na hÉireann, agus screamhuiscí; leibhéil uisce agus sruthanna aibhneacha a thomhas.
- Comhordú náisiúnta agus maoirsiú a dhéanamh ar an gCreat-Treoir Uisce.
- Monatóireacht agus tuairisciú a dhéanamh ar Cháilíocht an Uisce Snámha.

Monatóireacht, Anailís agus Tuairisciú ar an gComhshaol

- Monatóireacht a dhéanamh ar cháilíocht an aeir agus Treoir an AE maidir le hAer Glan don Eoraip (CAFÉ) a chur chun feidhme.
- Tuairisciú neamhspleách le cabhrú le cinnteoireacht an rialtais náisiúnta agus áitiúil (*m.sh. tuairisciú tréimhsiúil ar Staid Chomhshaol na hÉireann agus Tuarascálacha ar Thascairí*).

Rialú Astaíochtaí na nGás Ceaptha Teasa in Éirinn

- Fardail agus réamh-mheastacháin na hÉireann maidir le gás ceaptha teasa a ullmhú.
- An Treoir maidir le Trádáil Astaíochtaí a chur chun feidhme i gcomhair breis agus 100 de na táirgeoirí dé-ocsaíde carbóin is mó in Éirinn.

Taighde agus Forbairt Comhshaoil

- Taighde comhshaoil a chistiú chun brúnna a shainaithint, bonn eolais a chur faoi bheartais, agus réitigh a sholáthar i réimsí na haeráide, an uisce agus na hinbhuanaitheachta.

Measúntachtaí Straitéisí Comhshaoil

- Measúnacht a dhéanamh ar thionchar pleananna agus clár beartaithe ar an gcomhshaol in Éirinn (*m.sh. mórphleananna forbartha*).

Cosaint Raideolaíoch

- Monatóireacht a dhéanamh ar leibhéil radaíochta, agus measúnacht a dhéanamh ar a oiread is atá muintir na hÉireann gan chosaint ar an radaíocht ianúcháin.
- Cabhrú le pleananna náisiúnta a fhorbairt le haghaidh éigeandálaí ag eascairt as taismí núicléacha.
- Monatóireacht a dhéanamh ar fhorbairtí thar lear a bhaineann le saoráidí núicléacha agus leis an tsábháilteacht raideolaíochta.
- Sainseirbhísí cosanta ar an radaíocht a sholáthar, nó maoirsiú a dhéanamh ar sholáthar na seirbhísí sin.

Treoir, Faisnéis Inrochtana agus Oideachas

- Comhairle agus treoir a chur ar fáil d'earnáil na tionsclaíochta agus don phobal maidir le hábhair a bhaineann le caomhnú an chomhshaoil agus leis an gcosaint raideolaíoch.
- Eolas tráthúil agus inrochtana faoin gcomhshaol a chur ar fáil chun an pobal a spreagadh páirt a ghlacadh i gcinnteoireacht chomhshaoil (*m.sh. Mo Thimpeallacht Áitiúil, Léarscáileanna Radóin*).
- Comhairle a chur ar fáil don Rialtas maidir le hábhair a bhaineann leis an tsábháilteacht raideolaíoch agus le cúrsaí práinnfhreagartha.
- Plean Náisiúnta Bainistíochta Dramhaíola Guaisí a fhorbairt chun dramhaíl ghuaiseach a chosc agus a bhainistiú.

Múscailt Feasachta agus Athrú Iompraíochta

- Feasacht chomhshaoil níos fearr a ghiniúint agus dul i bhfeidhm ar athrú iompraíochta dearfach trí thacú le gnóthais, le pobail agus le teaghlaigh a bheith níos éifeachtúla ar acmhainní.
- Tástáil le haghaidh radóin a chur chun cinn i dtithe agus in ionaid oibre, agus gníomhartha leasúcháin a spreagadh nuair is gá.

Bainistíocht agus Struchtúr GCC

Tá an gníomhaireacht á bainistiú ag Bord lánaimseartha, ar a bhfuil Ard-Stiúrthóir agus cúigear Stiúrthóirí. Déantar an obair ar fud cúig cinn d'Oifigí:

- An Oifig um Inbhuanaitheacht Comhshaoil
- An Oifig Forfheidhmithe i leith Cúrsaí Comhshaoil
- An Oifig um Fhianaise agus Measúnú
- An Oifig um Chosaint Radaíochta agus Monatóireacht Chomhshaoil
- An Oifig Cumarsáide agus Seirbhísí Corparáideacha

Tá Coiste Comhairleach ag an nGníomhaireacht le cabhrú léi. Tá dáréag comhaltaí air agus tagann siad le chéile go rialta le plé a dhéanamh ar ábhair imní agus le comhairle a chur ar an mBord.

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An Ghníomhaireacht um Chaomhnú Comhshaoil

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