



ENVIRONMENTAL PROTECTION AGENCY

SECTOR-SPECIFIC AER / PRTR GUIDANCE DOCUMENT:

**EMISSION AND WASTE TRANSFER REPORTING
GUIDANCE FOR THE INTENSIVE AGRICULTURE SECTOR**

For use in reporting of:

- 1 Emissions and Waste Transfers information via the EPA Electronic AER / PRTR Reporting Workbook**
- 2 The Emissions and Waste Transfers section of the Annual Environmental Report – PDF AER – Electronic Copy**

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General Introduction

This document is addressed to operators in the Intensive Agriculture sector who are required to:

- Report their annual Releases (emissions) under S.I. 123 of 2007 and S.I. 649 of 2011, the **Pollutant Release and Transfer (PRTR) Regulations**¹, and
- Submit an Annual Environmental Report to the EPA under their EPA Licences (PDF AER – Electronic Copy).

This Guidance Document is intended to provide sector specific guidance to assist in calculating the relevant emissions and in reporting of off-site waste transfers from EPA-licensed facilities in the Intensive Agriculture Sector.

Chapter 1 provides a brief introduction to the reporting requirements for licensed facility operators with regard to the annual submission of environmental information, and outlines the guidance available to assist operators in completing the reporting tasks.

Chapter 2 describes the use of the Excel-based Calculation Toolset “**AER / PRTR Intensive Agriculture Emissions Calculation Toolset Version 1.1 May 2009.xls**”, which provides a simple and efficient method of carrying out the calculations.

Chapter 3 provides a brief sector-specific guidance on the reporting of Off Site transfers of Waste.

Chapter 4 provides a detailed account of the derivation and appropriate use of the emission calculation methodologies employed in the AER / PRTR Intensive Agriculture Emissions Calculation Toolset. Individual calculation methodologies are given for each of the three types of Intensive Agriculture facility: Pig farms, Broiler farms and Duck farms, and these are employed in the individual Calculation Tools for each farm type.

Chapter 1 Introduction to AER and PRTR Annual Reporting of Environmental Information

1.1 Annual environmental information reporting: Three Tasks

The requirements for reporting of Annual Environmental Information² arise under the terms of both the PRTR Regulations and individual EPA licences issued under the EPA Acts 1992 – 2008, the Waste Management Acts 1996 – 2008, the Waste Water Discharge (authorisation) Regulations S.I. 684 of 2007 and other legislation.

¹ (European Communities (European Pollutant Release and Transfer Register) Regulation 2007, S.I. No. 123 of 2007 and S.I. 649 of 2011), which signed into Irish Law on 13 December 2011, the E-PRTR Regulation, (EC) No 166/2006, concerning the establishment of a European Pollutant Release and Transfer Register. These regulations are collectively referred to herein as the PRTR Regulations.

² This applies to Annual Reporting only; this does not supersede or render inapplicable the requirements in your licence for other regular reporting, e.g. returns of monitoring data, progress reports, waste records etc.

The annual reporting of environmental information by licensed facility operators falls into three main tasks. These are:

- 1 Reporting of emissions and waste transfers information to the EPA's [AER / PRTR Website](#) via the EPA's AER / PRTR Electronic Reporting Workbook.
- 2 Submission of the Full Annual Environmental Report (AER). **Hardcopy version no longer required.**
- 3 Submission of an electronic "pdf"³ copy of the AER.

It is important to note that each of these steps is mandatory; the reporting obligation will not be satisfied until all three steps are completed and the EPA has confirmed that it has accepted the information.

Also, the information cannot be accepted in any other manner or format other than that specified in the guidance documentation listed in the next section.

1.2 Guidance for collating and reporting your annual environmental information

The EPA has developed a series of Guidance Documents to assist facility operators in making their Annual Environmental Information returns.

These guidance Documents are all available on the [AER / PRTR Operator information pages](#) of the EPA website www.epa.ie:

1. *PRINCIPLES OF PRTR AND AER REPORTING OF ANNUAL ENVIRONMENTAL INFORMATION*
 - This introductory paper sets out the technical requirements and the legal framework for annual environmental reporting by both EPA-Licensed facilities and operators of relevant Non EPA-Licensed activities.
2. *The Step by Step Guide for AER / PRTR Reporting for EPA-licensed sites*
 - This Guide will assist you in making the required annual submissions of environmental information in accordance with your EPA Licence and with the PRTR Regulations.
 - A version of this document, the *Step by Step Guide for AER / PRTR Reporting for non EPA-licensed facilities*, intended for use by the operators of non EPA-licensed facilities, is also available here.
3. *EPA Guidance Note on the Annual Environmental Report*
 - This document provides guidance for compiling all of the necessary information on emissions, waste transfers and environmental performance of the facility.
4. *The EPA Guidance Note Annex on AER / PRTR Reporting*
 - This document provides detailed guidance on the requirements of both AER and PRTR emissions and waste transfers reporting for all EPA-licensed industry sectors and non-licensed industry subject to the PRTR Regulations.

3 Electronic, fully searchable/read-only, PDF Formatted Text and Graphics (also known as PDF Normal).

5. *The AER / PRTR Electronic Reporting Workbook and Website User Manual*
 - This document provides a detailed step-by-step procedure for using the Electronic AER / PRTR Reporting Workbook and for downloading from and uploading to the AER / PRTR Website.
6. *Procedure for creating and submitting your Full PDF AER*
7. Where applicable, the EPA's *Sector-Specific AER / PRTR Guidance Documents*
 - This document complements Documents 3 and 4, and provides sector-specific assistance in deciding what needs to be reported and for compiling the required information. For some sectors, the EPA have developed Excel-based Calculation Tools which provide for the calculation of the required emissions based on best available scientific knowledge.
8. *European Commission Guidance Document for the Implementation of the European PRTR, May 2006*
 - This document is more relevant to non-EPA licensed industry sectors but will be of interest to licensed sites as well. Please note, however, that in the event of any inconsistency or conflict between the EU Guidance Document and the requirements of your licence, the requirements of your licence shall be followed. Also, please be careful to take the widest interpretation of the guidance in relation to your facility.

1.3 Reporting of emissions and waste transfers information to the European PRTR website

The PRTR Regulations require that emissions and waste transfers from specified industrial and waste management operations must be reported to the European Commission for publication on a dedicated website.

Emissions and waste transfers are reportable under the European PRTR Regulation when two distinct criteria are met:

- 1 The facility itself must be carrying out one of the specified activities and must be of a sufficient size or capacity (*Annex I of the RPRT Regulation*), and
- 2 Each emission or the total quantity of waste *transferred must exceed prescribed threshold quantities (Annex II of the PRTR Regulation)*.

EPA-licensed facilities will be notified where any of their emissions or waste transfers exceed the relevant PRTR thresholds and will consequently be included in the annual report for Ireland to the European Commission.

For information purposes only, the Data Output Table in the Excel Calculation Tool indicates whether the calculated emissions exceed the relevant threshold and are therefore reportable to the European PRTR website under the PRTR Regulations, ASSUMING that your facility is of a scale which exceeds the relevant activity thresholds. The relevant Activity Capacity Threshold and the Release Thresholds for the substances most likely to be emitted from your facility are set out in Annexes I and II of the Regulation and are reproduced as Appendix 1 of this Guidance Document for your information.

Reporting of data to the European PRTR website does NOT indicate non-compliance with any licence limits.

Chapter 2 **Calculation of Emissions from Intensive Agriculture Facilities**

Emissions of relevance to the Intensive Agriculture sector with regard to reporting under the PRTR Regulation are:

1. **Ammonia Emissions to Air**
2. **Methane Emissions to Air**
3. **Nitrous Oxide Emissions to Air**

These emissions should be calculated using the accompanying Excel-based Calculation Toolset, "**AER / PRTR Intensive Agriculture Emissions Calculation Toolset Version 1.1 May 2009.xls**".

The Calculation Toolset provides a separate Data Entry and Output Worksheet for each of the following facility types: Pig farms, Broiler farms and Duck farms. Please select the appropriate one for your facility type.

The Calculation Toolset provides the calculated emissions information in a "**Data Output Table**" in the appropriate format for entry into the "**Releases to Air**" Worksheet of the EPA Electronic AER / PRTR Reporting Workbook.

The emission calculation methodologies are those used by the EPA's National Emission Inventories Unit. The derivation and use of the methodologies are discussed in detail in Chapter 4.

The emissions from Intensive Agriculture facilities are calculated using two types of information:

- 1 **Information on Indoor Housing arrangements**
- 2 **Information on Outdoor Manure Storage arrangements**

The necessary information varies by type of farm:

For **Pig Farms**, information is required on:

- Average annual Pig Numbers housed at the facility, broken down by animal category;
- Area of Outdoor Uncovered Manure Storage Units
- Form of manure storage (liquid or solid)

For **Broiler Farms** and for **Duck Farms**, information is required on:

- Broiler Production Cycles per year
- Broiler Bird Places
- Area of Outdoor Uncovered Manure Storage
- Duration of Outdoor Uncovered Storage of manure per cycle
- Form of manure storage (solid or liquid)

Each Data Entry and Output worksheet provides *Data Entry* cells for the entry of facility-specific information on stock numbers, manure storage area and on-site arrangements necessary to complete the calculations. The data entry cells are indicated by colour and by labels. The detailed calculations take place on and may be viewed on the "Calculations" sheets for each farm type.

A simple tool is provided for calculating the surface area of circular or rectangular manure storage units for entry into the **Data Entry Table**.

On completion of the data entry steps, the Calculation Tool will output the necessary emissions figures in the **Data Output Table** in the appropriate format for reporting via the "Releases to Air" worksheet of the EPA Electronic AER / PRTR Reporting Workbook.

When you have completed entering the information into the "Releases to Air" worksheet and you have completed entering your off-site waste transfers information, you may proceed to print out the relevant pages for insertion into the Summary of Emissions section of your Full AER. Please ensure that you print out the relevant "Data Entry and Output" worksheet from the Calculation Toolset and include this in the Emissions section of your Full AER.

For information purposes only, the Data Output Table in the Excel Calculation Tool will indicate whether the calculated emissions exceed the relevant threshold and are therefore reportable to the European PRTR website under the PRTR Regulations, ASSUMING that your facility is of a scale which exceeds the relevant activity thresholds.

Chapter 3 On-Site Treatment and Off Site Transfers of Waste

The main waste streams arising on Intensive agriculture facilities include those listed in the following table.

The table includes the relevant European Waste Catalogue (EWC) Codes for each waste type and provides additional information, which may be of assistance in making your information entries into the "Treatment & Transfers of Waste" worksheet of the EPA.

TABLE: The main waste streams expected to arise on Intensive Agriculture facilities

| EWC Chapter | Sub-Chapter | EWC Code | EWC Description | Nature of Waste (with example entries) | Waste Treatment Operation ¹ | Hazardous? ² |
|-------------|---|--|---|---|--|-------------------------|
| 02 | WASTES FROM AGRICULTURE, HORTICULTURE, AQUACULTURE, FORESTRY, HUNTING AND FISHING, FOOD PREPARATION AND PROCESSING | | | | | |
| | 02 01 | Wastes from agriculture, horticulture, aquaculture, forestry, hunting and fishing | | | | |
| | | 02 01 02 | Animal-Tissue Waste | Animal Carcasses | R3 | No |
| | | 02 01 04 | Waste plastics (except packaging) | Separated plastics, e.g. silage wrap | R3 | No |
| | | 02 01 08 | Agrochemical waste containing dangerous substances | e.g. Contaminated containers, fertiliser bags, feed bags where separately collected | D10 | Yes |
| | | 02 01 09 | Agrochemical waste other than those mentioned in 02 01 08 | | R3 / R4 / R5 | No |
| | | 02 01 99 | Wastes not otherwise specified | e.g. Organic material subject to Anaerobic Digestion or Composting | R3 | No |
| 15 | WASTE PACKAGING; ABSORBENTS, WIPING CLOTHS, FILTER MATERIALS AND PROTECTIVE CLOTHING NOT OTHERWISE SPECIFIED | | | | | |
| | 15 01 | Packaging (including separately collected municipal packaging waste) | | | | |
| | | 15 01 01 | Paper and cardboard packaging | | R3 | No |
| | | 15 01 02 | Plastic packaging | Uncontaminated plastic containers, fertiliser bags, feed bags, etc. | R3 | No |
| | | 15 01 03 | Wooden packaging | e.g. Pallets | R3 | No |

| EWC Chapter | Sub-Chapter | EWC Code | EWC Description | Nature of Waste (with example entries) | Waste Treatment Operation ¹ | Hazardous? ² |
|-------------|--|--|---|---|--|-------------------------|
| 18 | WASTES FROM HUMAN OR ANIMAL HEALTH CARE AND / OR RELATED RESEARCH | | | | | |
| | 18 02 | Wastes from research, diagnosis, treatment or prevention of disease involving animals | | | | |
| | | 18 02 01 | Sharps except (18 02 02) | Veterinary waste, e.g. syringes, vials, tubes | D10 | No |
| | | 18 02 02 | Wastes whose collection and disposal is subject to special requirements in order to prevent infection | Hazardous veterinary waste | D10 | Yes |
| 20 | MUNICIPAL WASTES (HOUSEHOLD WASTE AND SIMILAR COMMERCIAL, INDUSTRIAL AND INSTITUTIONAL WASTES) INCLUDING SEPARATELY COLLECTED FRACTIONS | | | | | |
| | 20 01 | Separately collected fractions (except 15 01) | | | | |
| | | 20 01 10 | Clothes | e.g. Tyvex coveralls | D5 | No |
| | | 20 01 21 | Fluorescent tubes and other mercury-containing waste | Fluorescent tubes | R4 | Yes |
| | | 20 01 99 | Other fractions not otherwise specified | Mixed recyclables | R13 | No |
| | 20 03 | Other municipal wastes | | | | |
| | | 20 03 01 | Mixed municipal waste | Domestic refuse bin | D5 | No |
| | | 20 03 04 | Septic tank sludge | | D5 | No |

¹ As defined in Article 4 of Waste Management Act 1996 – 2005 and set out in Schedules 3 (Disposal) and 4 (Recovery activities or operations);

² As defined in Article 4 of Waste Management Act 1996 – 2005 and set out in Schedule 2 (Hazardous Waste)

This is an indicative list only; you should add other categories of waste as required, depending on the specific situation on your facility; for example any construction or demolition wastes, asbestos waste, gypsum wastes etc. should be accounted under EWC Chapter 17: “CONSTRUCTION AND DEMOLITION WASTES (INCLUDING EXCAVATED SOIL FROM CONTAMINATED SITES)”.

Please read the description of the EWC Codes carefully when selecting the appropriate code for the particular waste stream; in some cases, one of the other EWC Codes within the EWC Chapter may be more appropriate, and should be reported.

The probable Waste Treatment Operation and Hazard status are given in relation to each EWC Code; this guidance should be used with caution, as it is a matter for the operator to apply the correct EWC code in consultation with your waste collector.

NOTE:

EWC Code 02 01 06: "Animal faeces, urine and manures (including spoiled straw), effluent, separately collected for treatment off-site" and **EWC Code 02 01 01: "Sludges from washing and cleaning":**

Do not include Animal Manures, Slurries or similar organic materials, where these are recovered as fertiliser by landspreading according to Licence Requirements.

The EPA does not consider these materials to be wastes where the materials are recovered by a lawful landspreading operation on clearly identified parcels of land and storage is limited to the demonstrated needs of the spreadlands.

Detailed guidance on the nature of the Waste Transfers (Waste Management) information to be reported is given in AER / PRTR is available in the [PRTR Operator guidance pages](#) of the EPA website www.epa.ie

Chapter 4 **Details and Derivation of the Emission Calculation Methodologies used in the Intensive Agriculture Calculation Tool**

The following is a brief outline of the emission calculation methodologies used in the accompanying excel-based Calculation Tool:

| Calculation Methods and Emission Factors | | |
|---|--|---|
| | METHOD | EMISSION FACTORS |
| Ammonia Emissions | Country specific TIER 2 METHOD (Emission factors adjusted to reflect national data 2009) | Emission factors provided by Dr. B. Hyde, EPA, 2009 |
| Methane Emissions | IPCC Good Practice Guide: TIER 1 METHOD (Enteric Fermentation); TIER 1 METHOD (Manure management) | Emission factors from EPA National Inventory Report 2009 on Greenhouse Gases provided by Dr. B. Hyde, EPA, 2009 |
| Nitrous Oxide Emissions | IPCC Good Practice Guide: TIER 1 METHOD (Manure management) | Emission factors from EPA National Inventory Report 2009 on Greenhouse Gases provided by Dr. B. Hyde, EPA, 2009 (ADAS UK, 2005 in relation to Ducks) |

The details of the calculation methodologies are discussed below.

1) **Ammonia Emissions**

It is considered that the methodology used by the EPA to report emissions of NH₃ under the Convention on Long Range Transboundary Air Pollutants (CLTRAP) and the National Emissions Ceilings Directive (Decision: 2001/81/EC) provides the most useful approach for calculating ammonia emissions from Irish Intensive farming. All emissions factors used to estimate national emissions are applicable at individual facility level.

Ammonia emission values (*g NH₃ animal d⁻¹*) for pig housing used in the calculations are based on Irish measured data and are referenced by 9 peer reviewed research papers, details of which are available from Dr. Bernard Hyde, EPA.

Indoor Housing Emissions -Pigs

It is assumed that ammonia emissions from all indoor pig housing occur all year for **365 days** and that they are the same, whether from a fully slatted unit, or a concrete floor & channel unit as suggested by international scientific literature.

The following approach outlines the methodology to calculate NH₃ emissions from pigs. Emission factors for housing (*g NH₃ per animal per day*) are presented in table 1.

Table 1: Ammonia emission factors for pig housing

| Type of pig | Emission factor (g NH ₃ per animal per day) |
|-------------------------|--|
| Suckling sow | 12.94 |
| Dry sow | 8.69 |
| Boars | 9.31 |
| Maiden gilts | 7.22 |
| Weaners (7 to 35 kg) | 2.70 |
| Finishers (35 to 98 kg) | 7.22 |

The calculation methodology is as follows:

$$\text{Type of pig (average number of animals)} * \text{emission factor} * \text{number of days housed (=365)}$$

Outdoor Storage Emission -Pigs

Only uncovered outdoor storage emissions are taken into account in the calculation, as all indoor storage under a slatted unit, or in indoor channels, are taken into account by the housing emission. The **surface area** of the uncovered storage is of significance for ammonia volatilisation rates, rather than the tank volume. Only one emission factor is applied to storage emissions. Emissions are calculated using the emission factor 3.16 g NH₃-N m⁻² per day. It is assumed that the store will always contain some slurry and therefore emissions will occur **365 days** of the year.

The calculation methodology is as follows:

$$\text{Surface area of the store} * \text{emission factor} * 365$$

Broiler Units

Indoor Housing Emissions -Broilers

With regard to annual ammonia emissions from broiler units, the average amount of days per year of production sheds usage is employed in the equation. This is based on *DAF 2000, Appendix 1, p.61*. An average of 5.5 production cycles per year is common, with an average of 42 days cycle length is used (reflecting a range between 35 and 49 days). There is generally a 3 to 4 week rest period between cycles, resulting in an average of **231 days production** per year. This figure is used in the default equation, however if the site-specific information of production cycles, and days per production cycle, is available, the facility's total days of production should be used instead of the default and should be fully documented. The emission factor to apply is 0.22 g NH₃-N per bird place per day.

The following methodology is used:

$$\text{Number of birds (bird places) * days occupied * emission factor}$$

Outdoor Manure Storage Emission -Broilers

The annual ammonia emissions from broiler manure storage heaps are based on the average amount of days that the manure is left outdoors after each production cycle. Generally, the manure may be removed from site after a few days. A maximum of 30 days is used in the calculation; as it is assumed that manure heaps turn anaerobic after approximately 1 month, after which ammonia emissions are negligible.

The surface area of the manure store is required. The area of the manure storage is calculated in square metres, even though it is acknowledged that the area of the storage heap will alter slightly depending on the angle and height of each manure heap. The emission factor used is 9.40 g NH₃-N m⁻² per day.

The following methodology is used:

$$\text{Surface area of manure heap * emission factor * 30}$$

2) Methane Emissions

The Intergovernmental Panel On Climate Change Tier I Default Guidance is used by the EPA in the estimation of methane emissions from pig and poultry production in annual submissions of Ireland's National Greenhouse Gas Emission Inventory to the European Commission (Decision 280/2004/EC) and to the United Nations Framework Convention on Climate Change. Methane emissions from pig and poultry production are not significant in Ireland, compared to emissions from cattle, and in the context of Intensive Agriculture are not as significant as ammonia emissions from pig and poultry farms. Details of the methodology are available from Dr. Bernard Hyde of the EPA.

Pigs and Poultry

Similar to NH₃ emission calculations, the estimation of methane emissions from pigs is undertaken on a per head basis.

The emission factors for pigs (kg/head/year) used in the National Greenhouse Gas Emission Inventory are presented in Table 2.

Table 2: Methane emission factors for pigs

| Type of pig | Enteric Fermentation | Manure Management |
|-------------------------|----------------------|-------------------|
| Suckling sow | 1.50 | 21.46 |
| Dry sow | 1.50 | 21.46 |
| Boars | 1.50 | 21.46 |
| Maiden gilts | 0.75 | 10.73 |
| Weaners (7 to 35 kg) | 0.11 | 8.58 |
| Finishers (35 to 98 kg) | 0.44 | 12.88 |

The following methodologies are used:

*Type of pig (average number of animals) * enteric fermentation emission factor*

*Type of pig (average number of animals) * manure management emission factor*

Please note that methane emissions from enteric fermentation do not occur with poultry. However, emissions do occur from manure management.

- The manure management emission factor to apply for methane emission from the management of broiler manure is **0.08 kg CH₄ per bird (bird place) per year**.

The following methodology is used:

*Broiler number (number of places) * manure management emission factor*

3) Nitrous Oxide Emissions

Pigs and Poultry

For nitrous oxide emissions, the IPCC Good Practice Guidance provides emission factors and calculation methodologies, which have been assessed and used by the EPA in compiling the National Greenhouse Gas Emission Inventory. Nitrous oxide emissions arise from both liquid and solid manure storage systems. The approach utilises nitrogen excretion rates which are sub-category dependent and are presented in Table 3, the fraction of manure nitrogen per storage system (liquid and solid manure systems), with an

- Emission factor for liquid storage systems of 0.001 kg N₂O-N per kg N and for
- Solid manure storage of 0.020 kg N₂O-N per kg N excreted.

Table 3: Nitrogen excretion rates per pig used in the National GHG inventory

| Type of pig | Nitrogen excretion (kg/head/year) |
|-------------------------|-----------------------------------|
| Suckling sow | 20.00 |
| Dry sow | 20.00 |
| Boars | 16.00 |
| Maiden gilts | 9.20 |
| Weaners (7 to 35 kg) | 3.00 |
| Finishers (35 to 98 kg) | 9.20 |

The following methodologies are used to estimate emissions:

*Type of pig (number of places) * N excretion per head per year * proportion housed on liquid systems * emission factor for liquid systems*

*Type of pig (number of places) * N excretion per head per year * proportion housed on solid manure systems * emission factor for solid manure systems*

The same methodological approach is used to calculate nitrous oxide emissions from the management of broiler manure utilizing a Nitrogen excretion rate of 0.24 kg N per bird place per year. The same emission factors (i.e. 0.001 for liquid systems and for solid manure storage of 0.020 kg N₂O-N per kg N excreted) are applied.

References and sources

Convention on Long Range Transboundary Air Pollutants (CLTRAP)

<http://www.unece.org/env/lrtap/>

DAF (Department of Agriculture, Food and Rural Development) 2000. Agri-Environmental Specifications for REPS 2000. Appendix 1, *Estimated quantities of neat excreta produced by the different classes of livestock (av. weight animals)*

<http://www.agriculture.gov.ie/areasofi/reps2/REPS%20%20Scheme%20Specifications.doc>

Garry, B.P., Fogarty, M., Curran, T.P., O'Connell, M.J. and O'Doherty, J.V. (2007). The effect of cereal type and enzyme addition on pig performance, intestinal microflora, and ammonia and odour emissions. *Animal* 1, 751-757.

Hayes, E.T., Leek, A.B.G., Curran, T.P., Dodd, V.A., Carton, O.T., Beattie, V.E. and O'Doherty, J.V. (2004). The influence of diet crude protein level on odour and ammonia emissions from finishing pig houses. *Bioresource Technology* 91, 309-315.

Intergovernmental Panel On Climate Change Tier I Default guidance

http://www.ipcc-nggip.iges.or.jp/public/gp/english/4_Agriculture.pdf

IPCC Good Practice Guidance

http://www.ipcc-nggip.iges.or.jp/public/gp/english/4_Agriculture.pdf

Leek, A.G.B., Callan, J.J., Reilly, P., Beattie, V.E. and O'Doherty, J.V. (2007). Apparent component digestibility and manure ammonia emission in finishing pigs fed diets based on

barley, maize or wheat prepared without or with exogenous non-starch polysaccharide enzymes. *Animal Feed Science and Technology* 135, 86-99.

Lynch, M.B., O'Shea, C.J., Sweeney, T., Callan, J.J. and O'Doherty, J.V. (2008). Effect of crude protein concentration and sugar-beet pulp on nutrient digestibility, nitrogen excretion, intestinal fermentation and manure ammonia and odour emissions from finisher pigs. *Animal* 2:3, 425-434.

Lynch, M.B., Sweeney, T., Callan, J.J. and O'Doherty, J.V. (2007a). The effect of dietary crude protein concentration and inulin supplementation on nitrogen excretion and intestinal microflora from finisher pigs. *Livestock Science* 109, 204-207.

Lynch, M.B., Sweeney, T., Callan, J.J. and O'Doherty, J.V. (2007b). The effect of dietary barley level on volatile acid concentration and manure ammonia emissions in finishing pigs. *Livestock Science* 109, 236-239.

National Emissions Ceilings Directive (Decision: 2001/81/EC)

<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2001:309:0022:0030:EN:PDF>

O'Connell, J.M., Sweeney, T., Callan, J.J. and O'Doherty, J.V. (2005). The effect of cereal type and exogenous enzyme supplementation in pig diets on nutrient digestibility, intestinal microflora, volatile fatty acid concentration and manure ammonia emissions from finisher pigs. *Animal Science* 81, 357-364.

O'Shea, C.J., Lynch, B., Lynch, M.B. and O'Doherty, J.V. (2009). *Agriculture, Ecosystems and Environment* 131, 154-160.

Pierce, K.M., Callan, J.J., McCarthy, P. and O'Doherty, J.V. (2007). The interaction between lactose level and crude protein concentration on piglet post-weaning performance, nitrogen metabolism, selected faecal microbial populations and faecal volatile fatty acid concentrations. *Animal Feed Science and Technology* 132, 267-282.

APPENDIX I

ACTIVITY, POLLUTANT AND WASTE THRESHOLDS FOR REPORTING TO THE EUROPEAN PRTR WEBSITE

Intensive Agriculture is one of the activity sectors covered by the scope of the E-PRTR Regulation, which entered into force on 24 February 2006 and was transposed into Irish Law by S.I 123 of 2007 on 22 March 2007.

Information on releases and waste transfers above the **Releases** (Annex II) and **Waste Transfer** (see *item 3 below*) Threshold Quantities from facilities operating above the relevant **Capacity Threshold** (Annex I) is required to be reported to the E-PRTR website under the PRTR Regulation.

1 Activity Capacity Reporting Thresholds

The following extract from Annex 1 of the Regulation specifies the capacity threshold that applies to Intensive Agriculture activity.

ANNEX I: Activity and Capacity Threshold

| No. | Activity | Capacity Threshold |
|-----|--|---|
| 7. | Intensive livestock production and aquaculture | |
| (a) | Installations for the intensive rearing of poultry or pigs | (i) With 40 000 places for poultry (ii) With 2 000 places for production pigs (over 30 kg) (iii) With 750 places for sows |

2 Pollutant Release Reporting Thresholds

The following extract from Annex II of the Regulation specifies the Pollutant Release Thresholds that apply to the substances most likely to be present in emissions from your facility. This should not be considered to be a definitive list, so please ensure that you report any other relevant pollutants if they are present in releases from your facility.

ANNEX II: Pollutants

| No | CAS Number | Pollutant | Threshold for releases (column 1) | | |
|----|------------|---|-----------------------------------|---------------------------------|--------------------------------|
| | | | To air (column 1a) kg/year | To water (column 1b) kg/year | To land (column 1c) kg/year |
| 1 | 74-82-8 | Methane (CH ₄) | 100 000 | - | - |
| 6 | 7664-41-7 | Ammonia (NH ₃) | 10 000 | - | - |
| 8 | | Nitrous oxides (NO _x / NO ₂) | 10 000 | - | - |

3 Off-Site Waste Transfers Reporting Thresholds

For off-site transfers of waste from a facility, the threshold values are:

2 tonnes per year for hazardous waste;

2,000 tonnes per year for non-hazardous waste.

- 'Waste' means any substance or object as defined in Article 1(a) of Council Directive 75/442/EEC on waste of 15 July 1975.
- 'Hazardous waste' means any substance or object as defined in Article 1(4) of Council Directive 91/689/EEC on hazardous waste of 12 December 1991.
- 'Non hazardous waste' means any waste which is not 'Hazardous waste'

While the EPA requires you to provide a breakdown of the individual waste streams generated on and transferred from your facility, the PRTR Regulation only requires a total sum of the non hazardous waste sent for:

- 1 Disposal
- 2 Recovery

There is one exception to this general rule:

For transboundary (international) movements of Hazardous Waste, the **name** and **address** of the Recoverer or the **Disposer** of the waste and the actual recovery or disposal site have to be reported.

The PRTR Regulation places the legal obligation for reporting to the E-PRTR website on each facility operator. However, assuming that your facility's information is reported to us in line with this Guidance Document, we will be able to extract the relevant information for your facility and deliver it to the E-PRTR website.

More detailed guidance on the reporting requirements applying to the E-PRTR Website may be found in AER / PRTR Guidance Document No. 8 the "*European Commission's Guidance Document for the implementation of the European PRTR, May 2006*", which is available on the [AER / PRTR Operator information pages](#) of the EPA website www.epa.ie: