

## **Ireland's 2004 European Pollutant Emission Register (EPER) Report**

November 2006

### **Summary**

**The Environmental Protection Agency has published the European Pollution Emission Register for 2004. This register compiles data on 50 pollutants emitted by 183 facilities located Nationwide. The publication of this register complies with the requirements set out in the Council Directive 96/61/EC on integrated pollution prevention and control (IPPC Directive) and the EPER Decision 2000/479/EC.**

**The report details emissions to air, to off-site waste water treatment plants and to surface water of specific pollutants from activities licensed by the EPA where they exceed specified reporting thresholds. Through the licensing of these activities, better data has been generated on emission quantities and types. This information is now being made available to the public and meets the goals set out in the AARHUS Convention. The Convention stresses the need for citizen's participation in environmental issues and for access to information on the environment held by public authorities.**

**This is the second report in the EPER series, the first of which was submitted in 2003 and covered emissions for the reporting year 2001. The figures reveal a number of highly positive trends, with significant decreases in the emission of several significant pollutants from industrial and waste facilities.**

**The detailed 2004 EPER report from Ireland and from other countries in Europe is available on the EPER website <http://www.eper.cec.eu.int/eper/> from 23 November 2006.**

### **Introduction**

The European Pollutant Emission Register, EPER<sup>1</sup> aims to provide an easily publicly accessible, consistent and comprehensive overview of emissions to the environment around Europe. The EPER is a system for the reporting of the sources and amounts of emissions to air, water and land from European industry.

Annex 1 of the IPPC Directive specifies the Classes of Activities to which the EPER reporting requirement applies. Classes of Activities reported for Ireland are reproduced in Table 1 of this report.

Under the EPER Decision, Member States are required to produce a report every three years on the emissions which exceed prescribed thresholds into air and waters for 50 specified pollutants. Of these 50 substances, 37 substances may be emitted to air and 26 may be emitted to waters; 14 substances are common to both air and water.

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<sup>1</sup> established by Commission Decision 2000/479/EC of 17 July 2000. The EPER Decision is based on Article 15(3) of Council Directive 96/61/EC concerning integrated pollution prevention and control (the IPPC Directive).

The EPA has completed the 2004 EPER database report and submitted the relevant datasets to the European Commission by their deadline of 30 June 2006.

This is the second report in the EPER series, the first of which was submitted in 2003 and covered emissions for the reporting year 2001.

## **The Approach**

The EPA is responsible for regulating activities that have significant polluting potential including the assessment and determination of IPC and waste licenses. Emissions from licensed facilities are reported annually to the EPA in the Annual Environmental Report (AER) required by their licences.

A number of approaches are available when determining emissions from facilities:

- Direct measurement, e.g. by recording and sampling emission points whether continuously or periodically using internationally approved or accepted methodologies;
- Calculation based on nationally or internationally accepted approaches including emission factors, analysis of raw materials and usage data or indicators;
- Estimation based on non-standardised or self-developed methods.

In several activity sectors, direct measurement of emissions is not technically feasible, is not practicable or is not the most reliable approach to quantification. Examples include emissions from landfills and emissions from intensive agriculture. For these, the use of emission factors or models is a well-established and internationally accepted approach. These methods were used where necessary.

## **Findings of the 2004 EPER report**

A summary of the emissions by pollutant is provided below in Tables 2, 3 and 4.

The following are some key observations in relation to the 2004 report.

- The 2004 EPER report consists of emissions from a total of 183 facilities. The largest sectors that contributed to emissions were intensive agriculture (70 facilities), landfill (46 facilities), food (17 facilities) and combustion (15 facilities).
- 20 of the 37 air substances listed under the EPER decision were emitted above threshold by at least one Irish facility in 2004.
- 15 of the 26 water substances listed under the EPER decision were emitted above threshold by at least one Irish facility in 2004.
- 11 pollutants were reported for indirect emissions to off-site waste water treatment plants.

- 12 pollutants were reported for emissions directly to surface water.

The EPER reports provide valuable information on releases to the environment and will provide a means of targeting its enforcement work towards addressing the largest emissions to the Irish environment.

### ***Contrasts with 2001 report***

The 2001 data have been presented in the Tables below alongside the 2004 figures. Emissions from a total of 183 facilities exceeded the relevant threshold in 2004, compared to 154 in 2001. The increase was mainly due to an increase in licensed piggeries in 2004 compared to 2001. In addition, higher numbers of facilities in the cement, lime and glass sector and the food industry reported emissions in excess of EPER thresholds in the 2004 reporting year.

Comparison of the 2001 and 2004 EPER reports shows substantial improvement in the emissions of a number of significant pollutants since 2001. These changes are most significant in relation to gas emissions from large or complex facilities, such as power generators and other large combustion plants as well as large landfills.

As an example, while Ireland's national carbon dioxide emissions in 2004 were three per cent down on the 2001 levels, reaching 45,266 tonnes in 2004, carbon dioxide emissions from large/complex industry reporting under EPER dropped by more than 14 per cent between 2001 and 2004. Carbon Dioxide emissions from industries reporting to the register represent 45 per cent of the national total for 2004, compared to 51 per cent in 2001.

The register also indicates that sulphur oxides and nitrogen oxides dropped by 43 per cent and 8 per cent respectively between 2001 and 2004. These figures suggest that regulation has encouraged the reduction of heavy oil fuel use in industry and a move towards more environmentally friendly energy sources. Examples include the use of natural gas and tallow instead of fuel oil and the reduction in high sulphur-content fuels.

Methane emissions from large landfills in 2004 were 30 per cent lower than in 2001, reflecting the considerable efforts made on these facilities to intercept and recover the energy from landfill gas produced on site.

Other changes in the registers between 2001 and 2004 are more difficult to relate to specific causes. The observed changes are due to a combination of factors: the effectiveness of environmental regulation, changes in processes, abatement or materials used at facilities and changes in the types of facilities reporting. There were also substantial improvements in the methods of determining emissions by facilities in 2004. Finally, certain pollutants were only emitted in quantities exceeding the reporting thresholds by small numbers of facilities in one or other of the reporting years, so the overall comparison is unrepresentative of the national situation in respect of these pollutants. It is therefore not appropriate to conclude that, in all cases, changes in reported figures between reporting years represent actual changes in emissions to the environment.

## **The Future**

There have now been two reporting cycles under the EPER reporting mechanism. As was originally envisaged, the EPER exercises have promoted considerable improvements in the number of reports submitted by industrial facilities in their environmental emissions and in the quality and reliability of that information.

In addition to providing access to the environmental information collected under EPER, the mechanism has also provided a strong base for the various initiatives which will be necessary to fully implement the successor to EPER, the Pollutant Release and Transfer Register (PRTR). The PRTR was formally adopted in the European Union Regulation (EC) No 166/2006, which came into force on 24 February 2006.

PRTR represents a more comprehensive accounting of environmental emissions, and requires the reporting of a number of additional activities. The list of substances to be reported has increased from 50 to 91, and reporting will become continuous on an annual basis rather than periodic every three years. The first PRTR reporting year is 2007, which will be submitted in 2009. Information on emissions will continue to be published at European level.

## TABLES

**Table 1 – Breakdown of numbers of facilities in each IPPC sector 2004 & 2001**

<b>IPPC Annex 1 Class of Activity</b>	<b>No. of facilities reported 2004</b>	<b>No. of facilities reported 2001</b>
Combustion installation >50MW	15	13
Mineral oil and gas refineries	1	1
Installations for the production of ferrous and non-ferrous metals	2	1
Production of cement, lime, glass etc.	9	5
Production of organic chemicals	5	4
Production of inorganic chemicals	0	2
Pharmaceutical products	12	12
Installation for disposal or recovery of hazardous waste	2	1
Installations for disposal of non-hazardous waste (landfill)	46	48
Plants for tanning of hides and skins	0	2
Slaughterhouses, plants for production of milk, other animal raw materials or vegetable raw materials.	17	10
Installations for poultry and pigs	72	54
Surface treatment for solvents	2	1
<b>TOTAL</b>	<b>183</b>	<b>154</b>

Tables 2, 3 and 4 present the total emissions of each pollutant to air, direct to water and indirect to water for 2004 and 2001 <sup>2</sup>.

**Table 2 Total emissions of each pollutant to air for 2004 and 2001**

	<b>Pollutant</b>	<b>2004 Kg</b>	<b>2001 Kg</b>
Emission to air	Arsenic	160	116
Emission to air	Cadmium	176	0
Emission to air	Methane	46,234,500	66,299,000
Emission to air	Carbon Monoxide	766,000	0
Emission to air	Carbon Dioxide	20,350,800,000	23,619,000,000
Emission to air	Chromium	141	349
Emission to air	Copper	86	239
Emission to air	Dichloromethane	36,170	22,630
Emission to air	HFCs	165	0
Emission to air	Mercury	127	105
Emission to air	Ammonia	1,777,100	1,950,500
Emission to air	Nickel	6,774	1,710
Emission to air	NMVOCs	548,000	121,000
Emission to air	Nitrogen Oxides (Oxides of Nitrogen)	46,682,000	50,958,000
Emission to air	Lead	2,316	0
Emission to air	PFCs	27,400	0
Emission to air	PM10	4,103,800	1,542,000
Emission to air	Sulphur Dioxide (Oxides of Sulphur)	52,128,000	91,498,000
Emission to air	Zinc	342	588
Emission to air	Trichloromethane	0	2,940

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<sup>2</sup> The differences between the 2001 and 2004 reports are largely due to reasons such as closure of facilities, licensing and commencement of new facilities or changes in processes, abatement or chemicals used at a facility. There were also substantial improvements in the methods of determining emissions by facilities in 2004. It is therefore not appropriate to conclude that changes in reported figures between reporting years represent actual changes in emissions to the environment.

**Table 3 Total emissions of each pollutant to water (indirect emissions to off-site wastewater treatment plant) for 2004 and 2001**

	<b>Pollutant</b>	<b>2004 Kg</b>	<b>2001 Kg</b>
Indirect emission to water	Chromium	0	56
Indirect emission to water	Copper	104	274
Indirect emission to water	Dichloromethane	1,032	1,200
Indirect emission to water	Fluorides	13,500	0
Indirect emission to water	Mercury	4	0
Indirect emission to water	Nickel	23	274
Indirect emission to water	Lead	1,899	0
Indirect emission to water	Phenols	49	0
Indirect emission to water	Total Nitrogen	340,000	78,200
Indirect emission to water	Total Phosphorus	35,090	16,990
Indirect emission to water	Total Organic Carbon	351,800	0
Indirect emission to water	Zinc	1,180	453

**Table 4 Total emissions of each pollutant to water (direct emissions to surface water) for 2004 and 2001**

	<b>Pollutant</b>	<b>2004 Kg</b>	<b>2001 Kg</b>
Direct emission to water	BTEX	4,087	0
Direct emission to water	Cadmium	6	0
Direct emission to water	Chlorides	2,530,000	0
Direct emission to water	Chromium	152	475
Direct emission to water	Copper	193	163
Direct emission to water	Nickel	221	63
Direct emission to water	Lead	132	0
Direct emission to water	Phenols	692	0
Direct emission to water	Total Nitrogen	882	778,000
Direct emission to water	Total Phosphorus	22,410	28,000
Direct emission to water	Total Organic Carbon	112,000	0
Direct emission to water	Zinc	377	1,200
Direct emission to water	Dichloromethane	0	740