



# Emission Factor Database -EFDB-

## Background of EFDB

The quality of national GHG inventories depends substantially on reliable emission factors and activity data. Although it is preferable to use emission factors that reflect national circumstances, emission factor development is expensive, time consuming and necessitates a wide degree of expertise.

Sharing of research information would enable countries to use or develop emission factors that are more applicable to the circumstances in question than the IPCC default emission factors, without having to bear the associated research costs. For this reason, many countries argued that an easily accessible public database on GHG emission factors with supporting scientific information would help to improve the quality of GHG inventories in a cost-effective way.

With this background, a project to establish the EFDB was initiated with a scoping meeting in New Delhi, India, in July 2000. Subsequently two expert meetings (1<sup>st</sup> in Paris, France, in July 2001; 2<sup>nd</sup> in Bratislava, Slovakia, in April 2002) were held to consider functional design of the database. A prototype database was produced and subjected to pilot testing by a number of inventory experts from different countries that led to improvement of the functional design. The EFDB was finally released to the public at the 8th session of the Conference of the Parties to the UNFCCC (COP8) in October 2002

## How to Find EFDB

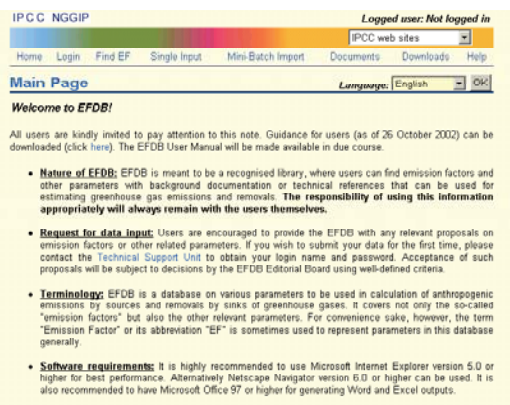
The EFDB is accessible in two different forms:

- Web version – to search data and to submit data.
- CDROM version - for search data.

The web application is the core of the system. New data should be submitted in web version. Please note that the CDROM is only updated periodically – the web version may contain more recent data.

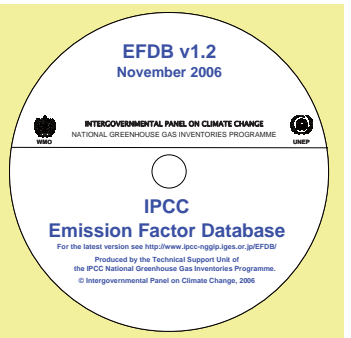
### Web version

<http://www.ipcc-nggip.iges.or.jp/EFDB/main.php>



### CDROM version

Contact the Technical Support Unit of NGGIP ([ipcc-efdb@iges.or.jp](mailto:ipcc-efdb@iges.or.jp)) if you wish to obtain the latest CDROM version



The 2006 IPCC Guidelines are available as free download from our website:  
<http://www.ipcc-nggip.iges.or.jp/>

This site also contains earlier editions of the IPCC Guidelines and supporting material in addition to information about the EFDB. A CDROM version of the Guidelines is also available for those with problems downloading the files. The Guidelines have been translated into all UN languages and these are also available on the website.

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## Objective

The IPCC has developed a web based tool supporting users of the IPCC Guidelines\*: the IPCC Emission Factor Database (EFDB). It provides additional support to the greenhouse gas emission inventory community by giving inventory compilers a platform for exchange of all the current information and data they need, including a wide range of emission factors. Its aim is to be:

**an always up-to-date companion for the IPCC Guidelines for National Greenhouse Gas Inventories that is seen as a worldwide resource for greenhouse gas inventory developers.**

The EFDB supports the greenhouse gas inventory community by serving as:

- a **Library** of well documented and evaluated emission factors and other parameters,
- a **Communication Platform** for collecting, distributing and commenting on emission factors and other parameters.

The responsibility for selecting and using this information appropriately will always remain with the users.

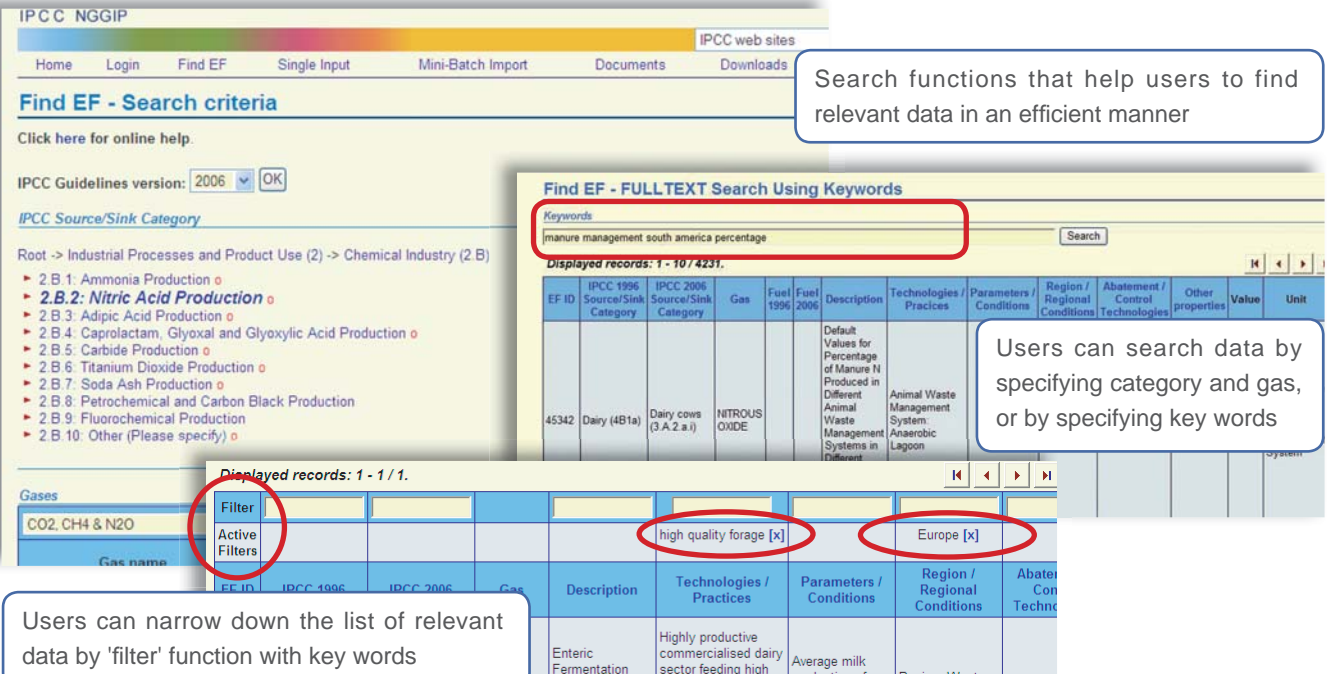
## Contents of EFDB

The EFDB is available in online and offline versions. They both contain a library of well documented and evaluated values for emission factors and other parameters that can be used by emission inventory compilers all over the world.

Both versions provide search facilities to find quickly and easily an overview of all relevant emission factors in the database for a specific source category, a fuel (when relevant) and a gas. The user can then further narrow down the selection and find emission factors that are of specific interest in his or her application.

Once an emission factor in the database has been identified, all information in the data record will be available to the user. This information will allow the user to establish whether or not the emission factor is applicable in the inventory under construction and, in many cases, what the uncertainties are. An example of such a data record is shown overleaf.

\* For the various IPCC Guidelines for national greenhouse gas inventories, see <http://www.ipcc-nggip.iges.or.jp/>.



**Search functions that help users to find relevant data in an efficient manner**

**Users can search data by specifying category and gas, or by specifying key words**

**Users can narrow down the list of relevant data by 'filter' function with key words**

EF ID	IPCC 1996 Source/Sink Category	IPCC 2006 Source/Sink Category	Gas	Fuel 1996	Fuel 2006	Description	Technologies / Practices	Parameters / Conditions	Region / Regional Conditions	Abatement / Control Technologies	Other properties	Value	Unit
45342	Dairy (4B1a)	Dairy cows (3.A.2.a.i)	NITROUS OXIDE			Default Values for Percentage of Manure N Produced in Different Animal Waste Management Systems in Different	Animal Waste Management System: Anaerobic Lagoon		Europe [x]				

### Submission of Data

The online version of *EFDB* is also a platform for exchange of relevant data for greenhouse gas inventory compilers. The *EFDB* is therefore open to any relevant proposals on emission factors or other parameters. To ensure that data included in *EFDB* meet a set of criteria, new data, proposed for *EFDB* are evaluated by an Editorial Board.

Submission of proposals of new emission factors or other parameters will be highly appreciated because it enriches *EFDB* and hence it enhances the usefulness of *EFDB*.

The *EFDB* website offers users the ability to propose new emission factors on line, both for single data or for so-called mini batch input (up to 20 new emission factors simultaneously). The *EFDB* also can accept bulk data proposals, using electronic formats agreed in advance with the Technical Support Unit (TSU) of the IPCC National Greenhouse Gas Inventories Programme (IPCC-NGGIP). The TSU < ipcc-efdb@iges.or.jp > will provide support and help in this process and welcome enquiries.

#### Benefits to Data Providers

Data providers can benefit from data submission, because the *EFDB*:

- disseminates and distributes new data and research results within the international GHG emission inventory community;
- provides an independent transparency check for your data;
- provides an opportunity to contribute to inventory improvement worldwide; and
- provides an opportunity to contribute to IPCC activities.

### Evaluation of Data Proposed

The evaluation of new data proposed to *EFDB* takes place in two steps:

1. The TSU performs an initial check to ensure that all the necessary information is provided so that the *EFDB* user can assess the applicability of the data in the own inventory. If needed the TSU will consult the data provider to improve and complete the information.
2. Next, the data proposal will be forwarded to the *EFDB* Editorial Board for evaluation according to the criteria for acceptance of proposed data.

The TSU manages the data evaluation while the Editorial Board has the final say over the data acceptance or rejection.

Information on type of parameter – how it was derived

Export function to MS-Excel or MS-Word

### EFDB Editorial Board

The *EFDB* Editorial Board was established by the Bureau of the Task Force on National Greenhouse Gas Inventories at its 9th session in November 2002 with the objective **to ensure all emission factors and other parameters contained in the *EFDB* fulfil the acceptance criteria.**

The members of Editorial Board are appointed for terms of two or four years. It consists of 35 members (including 2 Board Co-Chairs) with good balance of expertise as well as geographical representation. The Editorial Board may be supplemented with additional members to fulfil expertise required for the task.

Emission Factor Detail (ID: 213624)	
<b>Administrative information</b>	
Data Provider:	GIO/GER/NIES
Data Provider Country:	Japan
Data Provider Contact:	www.gio@nies.go.jp
Date calculated:	2005/6/25
Date submitted to EFDB by Data Provider:	2006-03-27 20:00:27
Date posted to EFDB by IPCC:	2007-06-21 15:26:41
<b>Technical information</b>	
Gas:	NITROUS OXIDE
IPCC 1996 Source/Sink Category:	Industrial Processes (2) -> Chemical Industry (2B) -> Adipic Acid Production (2B3)
IPCC 2006 Source/Sink Category:	Industrial Processes and Product Use (2) -> Chemical Industry (2.B) -> Adipic Acid Production (2.B.3)
<b>Properties</b>	
Technologies/Practices:	
Parameters/Conditions:	N2O generation from adipic acid production
Region/Regional Conditions:	JAPAN
Abatement/Control Technologies:	
Others:	Measurement was made at Leona Plastics & Intermediates Plant, Nobeoka Works of Asahi Kasei Chemicals Corporation.
Description:	Generation Factor of N2O from Adipic Acid production
Value:	282 kg N2O/tonne adipic acid production
Value in common units:	
Equation:	Page 3.31 of the IPCC Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories (Tier 1); Page 2.19 of Reference Manual of the Revised 1996 Guidelines for National Greenhouse Gas Inventories
IPCC Worksheet:	Worksheet 2-8
Source of data:	Leona Intermediates Production Section Leona Plastics & Intermediates Plant, Nobeoka Works of Asahi Kasei Chemicals Corporation
Technical Reference:	N2O Emissions Factor from the Adipic Acid Production at Leona Plastics & Intermediates Plant, Nobeoka Works of Asahi Kasei Chemicals Corporation described by Greenhouse Gas Inventory Office of Japan.
Reference language:	English
Abstract in English:	The report documents the information about N2O generation from adipic acid production decomposition (same meaning as "destruction" indicated in GPG2000) due to the N2O decomposition equipment (same meaning as "destruction equipment" indicated in GPG2000) at Leona Plastics & Intermediates Plant, Nobeoka Works of the Asahi Kasei Chemicals Corporation.
Uncertainties expressed as 95% confidence limit:	Upper: +6.4% (300 [kg N2O/tonne adipic acid production]) Lower: -7.2% (262 [kg N2O/tonne adipic acid production])
Data quality:	Unknown
Distribution shape:	Normal
Data quality reference:	See technical reference
Other info on data quality:	The amount of N2O was calculated by multiplying N2O concentrations by gas flow-rates. N2O concentrations and gas flows were measured continuously by the online infrared gas analyzer and by the flow meters. The measuring precision of the infrared gas analyzer was in the range of +/- 2.0% of the full scale. The automatic calibration of the analyzer with the standard gas was performed once a week, and periodical inspections of the analyzers were conducted by a third party once a month. Equipment maintenance and calibration were conducted according to the plant's procedures in accordance with the adopted ISO9001 and ISO14001 systems. The accuracy ratio of the flowmeters was in the range of +/- 0.3%. The inspection of the flowmeters was performed annually under the Green House Gas Management System established by the Asahi Kasei Chemicals Corporation.
<b>Usage/Review information</b>	
Type of parameter:	Measured
Measurement technique/standard:	The amounts of N2O entering and exiting the abator were calculated by multiplying the N2O concentrations by its flow rates. The N2O concentrations were automatically measured by online infrared gas analyzers and the gas flow rates by flowmeters.
Periodicity of measurement:	Online infrared gas analyzers and flow meters were used to continuously measure the concentrations and the flow rates of N2O entering and exiting the decomposition equipment. The instantaneous value of a measurement was recorded every few seconds. The instantaneous values recorded data were used for N2O emission calculations.
External quality control performed:	The independent auditing organization certified in August, 2005 that emission estimates were conducted properly and the data obtained and verified from the investigation were valid and reliable.
Date of measurement:	2004-4-1 to 2005-4-1
Comments from the data provider:	
Comments from others:	
Link:	

Information on data provider

Detailed information on applicability that enables users to determine how to apply the data

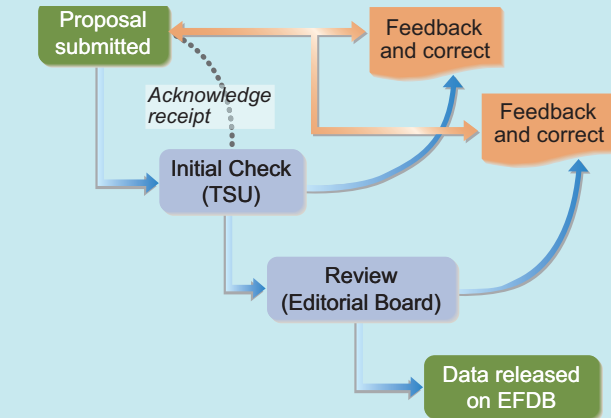
Direct references to the IPCC Guidelines

References to technical background information

Information on type of parameter – how it was derived

Export function to MS-Excel or MS-Word

### Data Acceptance Procedure



### Data Quality

Like the *IPCC Guidelines*, the *EFDB* aims to assist countries in producing inventories that meet the UNFCCC requirements. The responsibility of ensuring that the data from *EFDB* are used appropriately will always remain with the inventory compilers. To achieve this, a proposed emission factor or other parameter should:

- be in line with the fundamental principles and approaches of the *IPCC Guidelines* (including *Good Practice Guidance* reports);
- be accompanied by documentation describing the conditions of its derivation and applicability and by information regarding the level of uncertainty;
- be unbiased and as accurate as possible;
- contribute to the completeness of the *EFDB* by adding a value for a source not already covered or by providing a different value or an identical but independent value for an existing emission factor or parameter type.

To meet these standards, the proposed data should be **robust**, **applicable** and **documented**.

**Robust?** --- A robust emission factor or other parameter is one that, within the accepted uncertainty, is unlikely to change if there was repetition of the original measurement programme or modelling activity.

**Applicable?** --- An applicable emission factor or other parameter is one that matches either a specific IPCC source/sink category or subcategory, or another well defined source category that can be used in a national inventory compilation. An emission factor is applicable if the source and its mix of technology, operating and environmental conditions and abatement and control technologies under which the emission factor was measured or modelled are clear and allow the user to see how it can be applied.

**Documented?** --- For emission factors or other parameters to be transparent, access information to the original technical reference must be provided. This can preferably be done by reference to a scientific or technical publication in an internationally available journal or a report or book. For those emission factors or other parameters where this is not available, the data provider should provide the information required to enable a judgement on its quality.