NETL Life Cycle Inventory Data
Process Documentation File

Process Name: Natural Gas, U.S. Mix 2010, Extraction and Transport

Reference Flow: 1 kg of Natural Gas Delivered

Brief Description: This process includes all inputs for the raw material acquisition and raw material transportation for 1 kg of delivered natural gas proportionally from all extraction methods.

Section I: Meta Data

Geographical Coverage: US **Region:** N/A

Year Data Best Represents: 2010

Process Type: Extraction Process (EP)

Process Scope: Cradle-to-Gate Process (CG)

Allocation Applied: No

Completeness: Individual Relevant Flows Captured

Flows Aggregated in Data Set:

☒ Process ☒ Energy Use ☒ Energy P&D ☐ Material P&D

Relevant Output Flows Included in Data Set:

Releases to Air:	☒ Greenhouse Gases	☒ Criteria Air Pollutants	☐ Other
Releases to Water:	☒ Inorganic Emissions	☐ Organic Emissions	☐ Other
Water Usage:	☒ Water Consumption	☒ Water Demand (throughput)	
Releases to Soil:	☒ Inorganic Releases	☐ Organic Releases	☐ Other

Adjustable Process Parameters:

Associate	*The percent of natural gas extracted from petroleum associated wells*
Barnett	*The percent of natural gas extracted from Barnett Shale*
Coal	*The percent of natural gas extracted from coalbed methane deposits*
LNG	*The percent of natural gas imported as liquefied natural gas*

Marcellus	*The percent of natural gas extracted from Marcellus Shale*
Offshore	*The percent of natural gas extracted from conventional offshore wells*
Onshore	*The percent of natural gas extracted from conventional onshore wells*
TightSand	*The percent of natural gas extracted from tight sands*

Tracked Input Flows:

Natural Gas from Coalbed Methane	*The quantity of natural gas from specified extraction method*
Natural Gas from Associated Production	*The quantity of natural gas from specified extraction method*
Natural Gas from Barnett Shale	*The quantity of natural gas from specified extraction method*
Natural Gas from Conv. Onshore	*The quantity of natural gas from specified extraction method*
Natural Gas from Conv. Offshore	*The quantity of natural gas from specified extraction method*
Natural Gas from Tight Sands	*The quantity of natural gas from specified extraction method*
Natural Gas from Marcellus Shale	*The quantity of natural gas from specified extraction method*

Tracked Output Flows:

Natural Gas	*Delivered natural gas*

Section II: Process Description

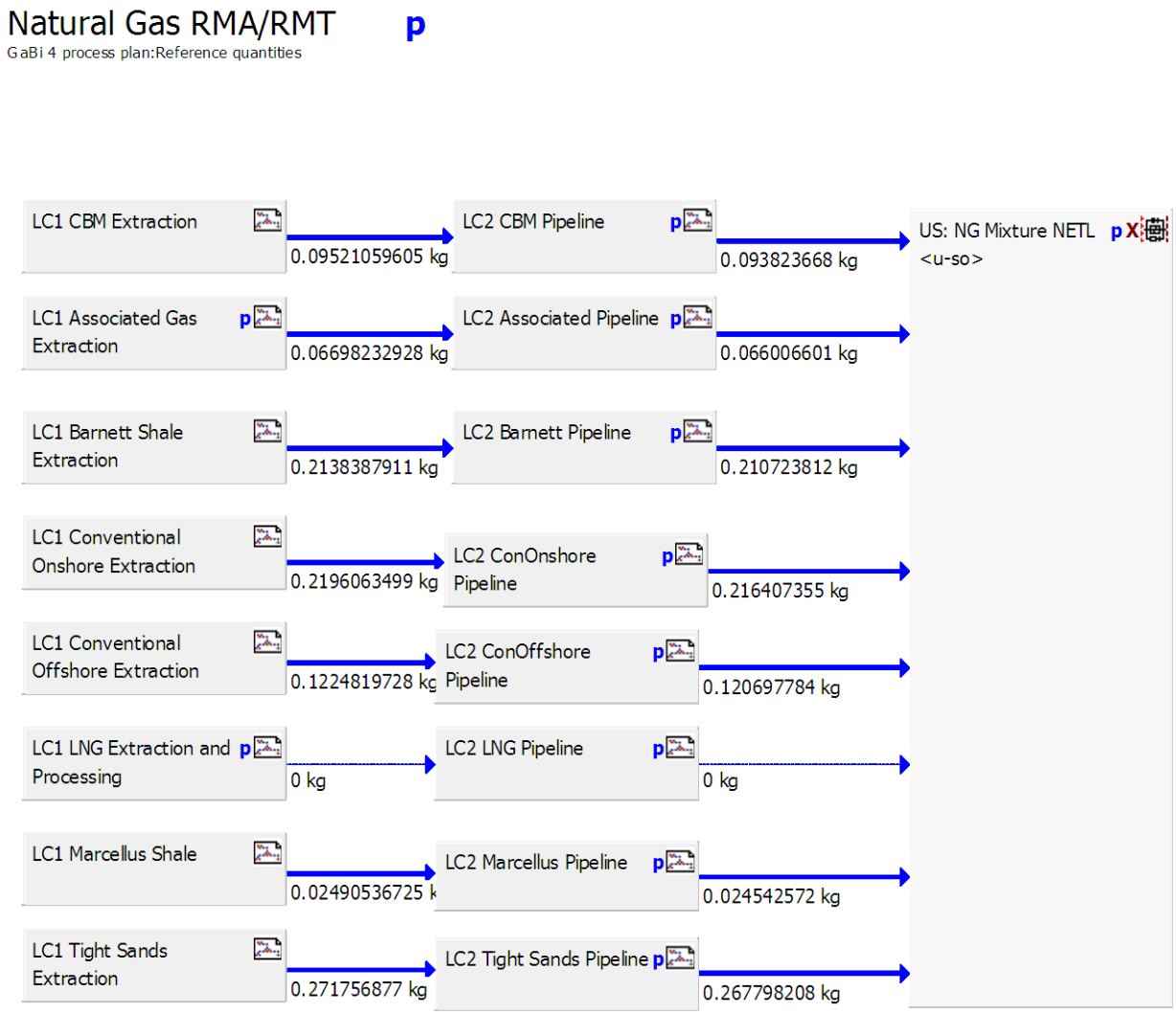
Associated Documentation

This unit process is composed of this document and the data sheet (DS) *DS_CTG_NaturalGas_USMix2010_2011.02.xls*, which provides additional details regarding relevant calculations, data quality, and references.

Goal and Scope

The scope of this unit process covers all aspects of raw material acquisition (RMA) and raw material transportation (RMT) to the energy conversion facility as seen in **Figure 1**. At the end, one kilogram of natural gas is delivered to the life cycle (LC) Stage #3 boundary. The RMA and RMT are discussed separately below.

Figure 1: Plan for RMA and RMT of Natural Gas



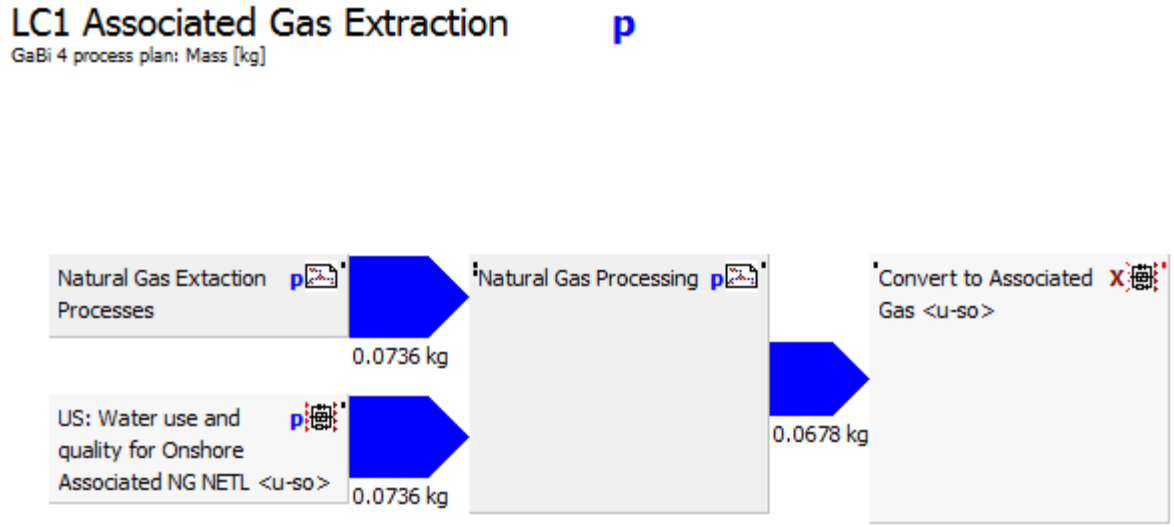
Boundary and Description

LC Stage #1, RMA of natural gas includes the ability to have extraction by coalbed methane, associated gas, Barnett shale, Marcellus shale, conventional onshore, convention offshore, Marcellus shale, tight sands, and the importation of liquefied natural gas (LNG). The natural gas is processed and put into a pipeline for transportation. The mixture shown in this process is the 2010 domestic mix and therefore does not include LNG.

Construction of the wells and pipelines are included. The upstream profiles for concrete and steel are rolled up into this process.

An example plan is provided in **Figure 2**. Overall plans for extraction and processes were created. For each method of extraction, additional processes were added as needed for water issues or any additional transportation of the crew in the case of offshore extraction.

Figure 2: Plan for RMA of Natural Gas



The construction process for both machinery and facilities were created and resulted in the following process:

- Natural Gas Well Construction and Installation
  (DS/DF_Stage1_C_Natural_Gas_Well_Generic_2011.01.doc)

Each piece of equipment or facility is scaled to the production of one kilogram of natural gas. The profiles and processes included in RMA are provided in **Table 1**. Those shown in bold face were developed by NETL.

Table 1: Profiles and Processes Included in RMA for Natural Gas

LC1 Associated Gas Extraction

Natural Gas Extraction Processes

Natural Gas Extraction Assembly <u-so>

Natural Gas Extraction, Pneumatic Venting <u-so>

US: Concrete, ready mixed, R-5-0 (100% Portland Cement) NETL <u-so>

US: DIESEL, NATIONAL AVERAGE, 2009 NETL <u-so>

US: Natural Gas Extraction, Other Venting Fugitives NETL <u-so>

US: Natural Gas Extraction, Other Venting Point Sources NETL <u-so>

US: Natural Gas Well Completion NETL <u-so>

US: Natural Gas Well Construction and Installation NETL <u-so>

US: NG Well Liquid Unloading NETL <u-so>

US: North American Average Electricity Mix, 2007 080811 NETL

US: Unconventional NG Well Workovers NETL <u-so>

V&F: Liquid Unloading

V&F: Other Venting Ext

V&F: Well Completion

V&F: Workovers

WOR: Steel Pipe, Welded, BF, Manufacture NETL <u-so>

Natural Gas Processing

Natio: Natural gas sweetening <u-so>

Natural Gas Processing, Pneumatic Venting <u-so>

US: Assembly of Natural Gas Compression NETL <u-so>

US: Diethanolamine (DEA) PE

US: Natural gas dehydration NETL <u-so>

US: Natural Gas Processing, Other Venting Fugitives NETL <u-so>

US: Natural Gas Processing, Other Venting Point Sources NETL <u-so>

US: North American Average Electricity Mix, 2007 080811 NETL

US: Wellhead Electrically-Powered Centrifugal Compressor NETL <u-so>

US: Wellhead Gas-Powered Centrifugal Compressor NETL <u-so>

US: Wellhead Reciprocating Compressor NETL <u-so>

V&F: Dehydration

V&F: Electrical Centrifugal Compression

V&F: Gas Centrifugal Compression

V&F: Other Venting, Point Source

V&F: Sweetening

Convert to Associated Gas <u-so>

US: Water use and quality for Onshore Associated NG NETL <u-so>

LC1 Barnett Shale Extraction

Natural Gas Extraction Processes

Natural Gas Extraction Assembly <u-so>

Natural Gas Extraction, Pneumatic Venting <u-so>

US: Concrete, ready mixed, R-5-0 (100% Portland Cement) NETL <u-so>
US: DIESEL, NATIONAL AVERAGE, 2009 NETL <u-so>
US: Natural Gas Extraction, Other Venting Fugitives NETL <u-so>
US: Natural Gas Extraction, Other Venting Point Sources NETL <u-so>
US: Natural Gas Well Completion NETL <u-so>
US: Natural Gas Well Construction and Installation NETL <u-so>
US: NG Well Liquid Unloading NETL <u-so>
US: North American Average Electricity Mix, 2007 080811 NETL
US: Unconventional NG Well Workovers NETL <u-so>
V&F: Liquid Unloading
V&F: Other Venting Ext
V&F: Well Completion
V&F: Workovers
WOR: Steel Pipe, Welded, BF, Manufacture NETL <u-so>

Natural Gas Processing

Natio: Natural gas sweetening <u-so>
Natural Gas Processing, Pneumatic Venting <u-so>
US: Assembly of Natural Gas Compression NETL <u-so>
US: Diethanolamine (DEA) PE
US: Natural gas dehydration NETL <u-so>
US: Natural Gas Processing, Other Venting Fugitives NETL <u-so>
US: Natural Gas Processing, Other Venting Point Sources NETL <u-so>
US: North American Average Electricity Mix, 2007 080811 NETL
US: Wellhead Electrically-Powered Centrifugal Compressor NETL <u-so>
US: Wellhead Gas-Powered Centrifugal Compressor NETL <u-so>
US: Wellhead Reciprocating Compressor NETL <u-so>
V&F: Dehydration
V&F: Electrical Centrifugal Compression
V&F: Gas Centrifugal Compression
V&F: Other Venting, Point Source
V&F: Sweetening

Convert to Barnett Shale <u-so>
US: Water use and quality for Barnett Shale NG NETL <u-so>

LC1 CBM Extraction

Natural Gas Extraction Processes

Natural Gas Extraction Assembly <u-so>
Natural Gas Extraction, Pneumatic Venting <u-so>
US: Concrete, ready mixed, R-5-0 (100% Portland Cement) NETL <u-so>
US: DIESEL, NATIONAL AVERAGE, 2009 NETL <u-so>
US: Natural Gas Extraction, Other Venting Fugitives NETL <u-so>
US: Natural Gas Extraction, Other Venting Point Sources NETL <u-so>
US: Natural Gas Well Completion NETL <u-so>
US: Natural Gas Well Construction and Installation NETL <u-so>

US: NG Well Liquid Unloading NETL <u-so>
US: North American Average Electricity Mix, 2007 080811 NETL
US: Unconventional NG Well Workovers NETL <u-so>
V&F: Liquid Unloading
V&F: Other Venting Ext
V&F: Well Completion
V&F: Workovers
WOR: Steel Pipe, Welded, BF, Manufacture NETL <u-so>

Natural Gas Processing

Natio: Natural gas sweetening <u-so>
Natural Gas Processing, Pneumatic Venting <u-so>
US: Assembly of Natural Gas Compression NETL <u-so>
US: Diethanolamine (DEA) PE
US: Natural gas dehydration NETL <u-so>
US: Natural Gas Processing, Other Venting Fugitives NETL <u-so>
US: Natural Gas Processing, Other Venting Point Sources NETL <u-so>
US: North American Average Electricity Mix, 2007 080811 NETL
US: Wellhead Electrically-Powered Centrifugal Compressor NETL <u-so>
US: Wellhead Gas-Powered Centrifugal Compressor NETL <u-so>
US: Wellhead Reciprocating Compressor NETL <u-so>
V&F: Dehydration
V&F: Electrical Centrifugal Compression
V&F: Gas Centrifugal Compression
V&F: Other Venting, Point Source
V&F: Sweetening

Convert to CBM <u-so>

US: Water use and quality for CBM NG NETL <u-so>

LC1 Conventional Offshore Extraction

Natural Gas Extraction Processes

Natural Gas Extraction Assembly <u-so>
Natural Gas Extraction, Pneumatic Venting <u-so>
US: Concrete, ready mixed, R-5-0 (100% Portland Cement) NETL <u-so>
US: DIESEL, NATIONAL AVERAGE, 2009 NETL <u-so>
US: Natural Gas Extraction, Other Venting Fugitives NETL <u-so>
US: Natural Gas Extraction, Other Venting Point Sources NETL <u-so>
US: Natural Gas Well Completion NETL <u-so>
US: Natural Gas Well Construction and Installation NETL <u-so>
US: NG Well Liquid Unloading NETL <u-so>
US: North American Average Electricity Mix, 2007 080811 NETL
US: Unconventional NG Well Workovers NETL <u-so>
V&F: Liquid Unloading
V&F: Other Venting Ext
V&F: Well Completion

V&F: Workovers

WOR: Steel Pipe, Welded, BF, Manufacture NETL <u-so>

Natural Gas Processing

Natio: Natural gas sweetening <u-so>

Natural Gas Processing, Pneumatic Venting <u-so>

US: Assembly of Natural Gas Compression NETL <u-so>

US: Diethanolamine (DEA) PE

US: Natural gas dehydration NETL <u-so>

US: Natural Gas Processing, Other Venting Fugitives NETL <u-so>

US: Natural Gas Processing, Other Venting Point Sources NETL <u-so>

US: North American Average Electricity Mix, 2007 080811 NETL

US: Wellhead Electrically-Powered Centrifugal Compressor NETL <u-so>

US: Wellhead Gas-Powered Centrifugal Compressor NETL <u-so>

US: Wellhead Reciprocating Compressor NETL <u-so>

V&F: Dehydration

V&F: Electrical Centrifugal Compression

V&F: Gas Centrifugal Compression

V&F: Other Venting, Point Source

V&F: Sweetening

Convert to Conventional Offshore <u-so>

US: GASOLINE, NATIONAL AVERAGE, 2009 NETL <u-so>

US: Offshore Crew Transport NETL <u-so>

US: Water use and quality for Conventional Offshore NG NETL <u-so>

LC1 Conventional Onshore Extraction

Natural Gas Extraction Processes

Natural Gas Extraction Assembly <u-so>

Natural Gas Extraction, Pneumatic Venting <u-so>

US: Concrete, ready mixed, R-5-0 (100% Portland Cement) NETL <u-so>

US: DIESEL, NATIONAL AVERAGE, 2009 NETL <u-so>

US: Natural Gas Extraction, Other Venting Fugitives NETL <u-so>

US: Natural Gas Extraction, Other Venting Point Sources NETL <u-so>

US: Natural Gas Well Completion NETL <u-so>

US: Natural Gas Well Construction and Installation NETL <u-so>

US: NG Well Liquid Unloading NETL <u-so>

US: North American Average Electricity Mix, 2007 080811 NETL

US: Unconventional NG Well Workovers NETL <u-so>

V&F: Liquid Unloading

V&F: Other Venting Ext

V&F: Well Completion

V&F: Workovers

WOR: Steel Pipe, Welded, BF, Manufacture NETL <u-so>

Natural Gas Processing

Natio: Natural gas sweetening <u-so>

Natural Gas Processing, Pneumatic Venting <u-so>
US: Assembly of Natural Gas Compression NETL <u-so>
US: Diethanolamine (DEA) PE
US: Natural gas dehydration NETL <u-so>
US: Natural Gas Processing, Other Venting Fugitives NETL <u-so>
US: Natural Gas Processing, Other Venting Point Sources NETL <u-so>
US: North American Average Electricity Mix, 2007 080811 NETL
US: Wellhead Electrically-Powered Centrifugal Compressor NETL <u-so>
US: Wellhead Gas-Powered Centrifugal Compressor NETL <u-so>
US: Wellhead Reciprocating Compressor NETL <u-so>
V&F: Dehydration
V&F: Electrical Centrifugal Compression
V&F: Gas Centrifugal Compression
V&F: Other Venting, Point Source
V&F: Sweetening
Natio: Convert to Onshore Conventional <u-so>
US: Water use and quality for Conventional Onshore NG NETL <u-so>
LC1 LNG Extraction and Processing
ASSEMBLY: LNG REGASIFICATION
REGASIFIACTION INSTALLATION
US: DIESEL, NATIONAL AVERAGE, 2009 NETL <u-so>
US: LNG REGASIFICATION INSTALLATION & DEINSTALLATION NETL
REGASIFICATION CONSTRUCTION
US: Concrete, ready mixed, R-5-0 (100% Portland Cement) NETL <u-so>
US: LNG REGASIFICATION FACILITY - CONSTRUCTION NETL
US: North American Average Electricity Mix, 2007 080811 NETL
WOR: Steel Plate, BF, Manufacture NETL <u-so>
REGASIFICATION OPERATION
US: DIESEL, NATIONAL AVERAGE, 2009 NETL <u-so>
US: North American Average Electricity Mix, 2007 080811 NETL
US: TRUNKLINE LNG OPERATION NETL
US: ASSEMBLY: LNG TRUNKLINE (Regasifier) NETL
ASSEMBLY: LNG TANKER TRANSPORT
LNG TANKER CONSTRUCTION
RER: Aluminum sheet mix PE
US: LNG Tanker Construction NETL
WOR: Steel Plate, BF, Manufacture NETL <u-so>
WOR: Steel, Stainless, 304 2B, 80% Recycled, MFG NETL <u-so>
LNG TANKER OPERATION
US: DIESEL, NATIONAL AVERAGE, 2009 NETL <u-so>
US: LNG Tanker Transport - Operation NETL
US: ASSEMBLY: NG - LNG TANKER

ASSEMBLY: TANKER BERTHING/DEBERTHING

US: DIESEL, NATIONAL AVERAGE, 2009 NETL <u-so>

US: Fuel oil heavy at refinery PE

US: LNG Tanker Escort, Docking, & Berthing/Deberthing NETL

LC1 LNG extraction

Natural Gas Extraction Processes

Natural Gas Extraction Assembly <u-so>

Natural Gas Extraction, Pneumatic Venting <u-so>

US: Concrete, ready mixed, R-5-0 (100% Portland Cement) NETL <u-so>

US: DIESEL, NATIONAL AVERAGE, 2009 NETL <u-so>

US: Natural Gas Extraction, Other Venting Fugitives NETL <u-so>

US: Natural Gas Extraction, Other Venting Point Sources NETL <u-so>

US: Natural Gas Well Completion NETL <u-so>

US: Natural Gas Well Construction and Installation NETL <u-so>

US: NG Well Liquid Unloading NETL <u-so>

US: North American Average Electricity Mix, 2007 080811 NETL

US: Unconventional NG Well Workovers NETL <u-so>

V&F: Liquid Unloading

V&F: Other Venting Ext

V&F: Well Completion

V&F: Workovers

WOR: Steel Pipe, Welded, BF, Manufacture NETL <u-so>

Natural Gas Processing

Natio: Natural gas sweetening <u-so>

Natural Gas Processing, Pneumatic Venting <u-so>

US: Assembly of Natural Gas Compression NETL <u-so>

US: Diethanolamine (DEA) PE

US: Natural gas dehydration NETL <u-so>

US: Natural Gas Processing, Other Venting Fugitives NETL <u-so>

US: Natural Gas Processing, Other Venting Point Sources NETL <u-so>

US: North American Average Electricity Mix, 2007 080811 NETL

US: Wellhead Electrically-Powered Centrifugal Compressor NETL <u-so>

US: Wellhead Gas-Powered Centrifugal Compressor NETL <u-so>

US: Wellhead Reciprocating Compressor NETL <u-so>

V&F: Dehydration

V&F: Electrical Centrifugal Compression

V&F: Gas Centrifugal Compression

V&F: Other Venting, Point Source

V&F: Sweetening

Convert to Conventional Offshore <u-so>

US: GASOLINE, NATIONAL AVERAGE, 2009 NETL <u-so>

US: Offshore Crew Transport NETL <u-so>

US: Water use and quality for Conventional Offshore NG NETL <u-so>

LC1 LNG Pipeline T&T

1.3 ONSHORE PIPELINE CONST. & INSTALLATION V2.0

US: 1.3 ONSHORE PIPELINE, CONSTRUCTION & INSTALLATION V 2.0 NETL

US: DIESEL, NATIONAL AVERAGE, 2009 NETL <u-so>

WOR: Steel Pipe, Welded, BF, Manufacture NETL <u-so>

1.3 ONSHORE PIPELINE DEINSTALLATION

US: DIESEL, NATIONAL AVERAGE, 2009 NETL <u-so>

US: ONSHORE PIPELINE DEINSTALLATION V 2.0 NETL

2.1 GAS PIPELINE, OPERATION

US: North American Average Electricity Mix, 2007 080811 NETL

US: Pipeline NG Operation 072611 NETL <u-so>

NG LIQUEFACTION, STORAGE & LOADING

LIQUEFACTION CONSTRUCTION

NG LIQUEFACTION FACILITY - CONSTRUCTION (Atlantic LNG) NETL

US: Concrete, ready mixed, R-5-0 (100% Portland Cement) NETL <u-so>

US: North American Average Electricity Mix, 2007 080811 NETL

WOR: Steel Pipe, Welded, BF, Manufacture NETL <u-so>

WOR: Steel Plate, BF, Manufacture NETL <u-so>

LIQUEFACTION INSTALLATION

US: ATLANIC LNG INSTALLATION/DEINSTALLATION NETL

US: DIESEL, NATIONAL AVERAGE, 2009 NETL <u-so>

AU: Natural Gas Liquefaction, Storage, & Ship Loading, Operation NETL

US: NG LIQUEFACTION, STORAGE & LOADING NETL

LC1 Marcellus Shale

Natural Gas Extraction Processes

Natural Gas Extraction Assembly <u-so>

Natural Gas Extraction, Pneumatic Venting <u-so>

US: Concrete, ready mixed, R-5-0 (100% Portland Cement) NETL <u-so>

US: DIESEL, NATIONAL AVERAGE, 2009 NETL <u-so>

US: Natural Gas Extraction, Other Venting Fugitives NETL <u-so>

US: Natural Gas Extraction, Other Venting Point Sources NETL <u-so>

US: Natural Gas Well Completion NETL <u-so>

US: Natural Gas Well Construction and Installation NETL <u-so>

US: NG Well Liquid Unloading NETL <u-so>

US: North American Average Electricity Mix, 2007 080811 NETL

US: Unconventional NG Well Workovers NETL <u-so>

V&F: Liquid Unloading

V&F: Other Venting Ext

V&F: Well Completion

V&F: Workovers

WOR: Steel Pipe, Welded, BF, Manufacture NETL <u-so>

Natural Gas Processing

Natio: Natural gas sweetening <u-so>

Natural Gas Processing, Pneumatic Venting <u-so>

US: Assembly of Natural Gas Compression NETL <u-so>

US: Diethanolamine (DEA) PE

US: Natural gas dehydration NETL <u-so>

US: Natural Gas Processing, Other Venting Fugitives NETL <u-so>

US: Natural Gas Processing, Other Venting Point Sources NETL <u-so>

US: North American Average Electricity Mix, 2007 080811 NETL

US: Wellhead Electrically-Powered Centrifugal Compressor NETL <u-so>

US: Wellhead Gas-Powered Centrifugal Compressor NETL <u-so>

US: Wellhead Reciprocating Compressor NETL <u-so>

V&F: Dehydration

V&F: Electrical Centrifugal Compression

V&F: Gas Centrifugal Compression

V&F: Other Venting, Point Source

V&F: Sweetening

Convert to Marcellus Shale <u-so>

Marcellus Shale Water Treatment with Crystallization <u-so>

US: DIESEL, NATIONAL AVERAGE, 2009 NETL <u-so>

US: Hydraulic Fracturing Water Delivery NETL <u-so>

US: Marcellus Shale Water Treatment at a WWTP <u-so>

US: North American Average Electricity Mix, 2007 080811 NETL

US: Water Use for Marcellus Shale Gas Extraction NETL <u-so>

LC1 Tight Sands Extraction

Natural Gas Extraction Processes

Natural Gas Extraction Assembly <u-so>

Natural Gas Extraction, Pneumatic Venting <u-so>

US: Concrete, ready mixed, R-5-0 (100% Portland Cement) NETL <u-so>

US: DIESEL, NATIONAL AVERAGE, 2009 NETL <u-so>

US: Natural Gas Extraction, Other Venting Fugitives NETL <u-so>

US: Natural Gas Extraction, Other Venting Point Sources NETL <u-so>

US: Natural Gas Well Completion NETL <u-so>

US: Natural Gas Well Construction and Installation NETL <u-so>

US: NG Well Liquid Unloading NETL <u-so>

US: North American Average Electricity Mix, 2007 080811 NETL

US: Unconventional NG Well Workovers NETL <u-so>

V&F: Liquid Unloading

V&F: Other Venting Ext

V&F: Well Completion

V&F: Workovers

WOR: Steel Pipe, Welded, BF, Manufacture NETL <u-so>

Natural Gas Processing

Natio: Natural gas sweetening <u-so>

Natural Gas Processing, Pneumatic Venting <u-so>

US: Assembly of Natural Gas Compression NETL <u-so>

US: Diethanolamine (DEA) PE

US: Natural gas dehydration NETL <u-so>

US: Natural Gas Processing, Other Venting Fugitives NETL <u-so>

US: Natural Gas Processing, Other Venting Point Sources NETL <u-so>

US: North American Average Electricity Mix, 2007 080811 NETL

US: Wellhead Electrically-Powered Centrifugal Compressor NETL <u-so>

US: Wellhead Gas-Powered Centrifugal Compressor NETL <u-so>

US: Wellhead Reciprocating Compressor NETL <u-so>

V&F: Dehydration

V&F: Electrical Centrifugal Compression

V&F: Gas Centrifugal Compression

V&F: Other Venting, Point Source

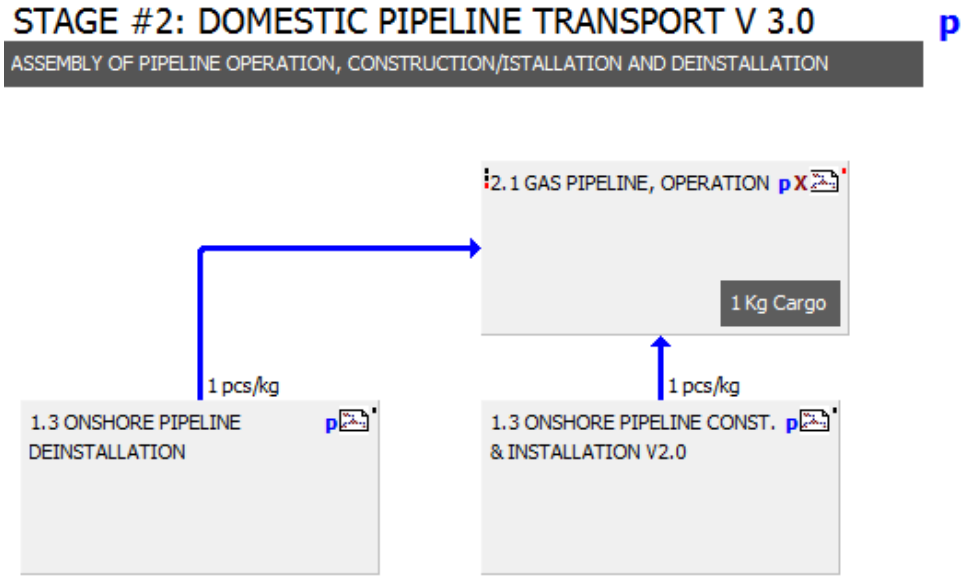
V&F: Sweetening

Convert to Tight Sands <u-so>

US: Water use and quality for Barnett Shale NG NETL <u-so>

LC Stage #2 (RMT) includes the transport of the natural gas to the energy conversion facility (LC Stage #3). All transportation is by onshore pipelines. The plan for RMT of natural gas is provided in **Figure 3.**

Figure 3: Plan for RMT of Natural Gas



The profiles and processes included in RMT are provided in **Table 2**. Those shown in bold face were developed by NETL.

Table 2: Profiles and Processes Included in RMT for Natural Gas

LC2 Associated Pipeline
- 1.3 ONSHORE PIPELINE CONST. & INSTALLATION V2.0
  - **US: 1.3 ONSHORE PIPELINE, CONSTRUCTION & INSTALLATION V 2.0 NETL**
  - **US: DIESEL, NATIONAL AVERAGE, 2009 NETL <u-so>**
  - **WOR: Steel Pipe, Welded, BF, Manufacture NETL <u-so>**
- 1.3 ONSHORE PIPELINE DEINSTALLATION
  - **US: DIESEL, NATIONAL AVERAGE, 2009 NETL <u-so>**
  - **US: ONSHORE PIPELINE DEINSTALLATION V 2.0 NETL**
- 2.1 GAS PIPELINE, OPERATION
  - **US: North American Average Electricity Mix, 2007 080811 NETL**
  - **US: Pipeline NG Operation 072611 NETL <u-so>**

LC2 Barnett Pipeline
- 1.3 ONSHORE PIPELINE CONST. & INSTALLATION V2.0
  - **US: 1.3 ONSHORE PIPELINE, CONSTRUCTION & INSTALLATION V 2.0 NETL**
  - **US: DIESEL, NATIONAL AVERAGE, 2009 NETL <u-so>**
  - **WOR: Steel Pipe, Welded, BF, Manufacture NETL <u-so>**
- 1.3 ONSHORE PIPELINE DEINSTALLATION
  - **US: DIESEL, NATIONAL AVERAGE, 2009 NETL <u-so>**
  - **US: ONSHORE PIPELINE DEINSTALLATION V 2.0 NETL**
- 2.1 GAS PIPELINE, OPERATION
  - **US: North American Average Electricity Mix, 2007 080811 NETL**
  - **US: Pipeline NG Operation 072611 NETL <u-so>**

LC2 CBM Pipeline
- 1.3 ONSHORE PIPELINE CONST. & INSTALLATION V2.0
  - **US: 1.3 ONSHORE PIPELINE, CONSTRUCTION & INSTALLATION V 2.0 NETL**
  - **US: DIESEL, NATIONAL AVERAGE, 2009 NETL <u-so>**
  - **WOR: Steel Pipe, Welded, BF, Manufacture NETL <u-so>**
- 1.3 ONSHORE PIPELINE DEINSTALLATION
  - **US: DIESEL, NATIONAL AVERAGE, 2009 NETL <u-so>**
  - **US: ONSHORE PIPELINE DEINSTALLATION V 2.0 NETL**
- 2.1 GAS PIPELINE, OPERATION
  - **US: North American Average Electricity Mix, 2007 080811 NETL**
  - **US: Pipeline NG Operation 072611 NETL <u-so>**

LC2 ConOffshore Pipeline
- 1.3 ONSHORE PIPELINE CONST. & INSTALLATION V2.0
  - **US: 1.3 ONSHORE PIPELINE, CONSTRUCTION & INSTALLATION V 2.0 NETL**
  - **US: DIESEL, NATIONAL AVERAGE, 2009 NETL <u-so>**

WOR: Steel Pipe, Welded, BF, Manufacture NETL <u-so>

1.3 ONSHORE PIPELINE DEINSTALLATION

US: DIESEL, NATIONAL AVERAGE, 2009 NETL <u-so>

US: ONSHORE PIPELINE DEINSTALLATION V 2.0 NETL

2.1 GAS PIPELINE, OPERATION

US: North American Average Electricity Mix, 2007 080811 NETL

US: Pipeline NG Operation 072611 NETL <u-so>

LC2 ConOnshore Pipeline

1.3 ONSHORE PIPELINE CONST. & INSTALLATION V2.0

US: 1.3 ONSHORE PIPELINE, CONSTRUCTION & INSTALLATION V 2.0 NETL

US: DIESEL, NATIONAL AVERAGE, 2009 NETL <u-so>

WOR: Steel Pipe, Welded, BF, Manufacture NETL <u-so>

1.3 ONSHORE PIPELINE DEINSTALLATION

US: DIESEL, NATIONAL AVERAGE, 2009 NETL <u-so>

US: ONSHORE PIPELINE DEINSTALLATION V 2.0 NETL

2.1 GAS PIPELINE, OPERATION

US: North American Average Electricity Mix, 2007 080811 NETL

US: Pipeline NG Operation 072611 NETL <u-so>

LC2 LNG Pipeline

1.3 ONSHORE PIPELINE CONST. & INSTALLATION V2.0

US: 1.3 ONSHORE PIPELINE, CONSTRUCTION & INSTALLATION V 2.0 NETL

US: DIESEL, NATIONAL AVERAGE, 2009 NETL <u-so>

WOR: Steel Pipe, Welded, BF, Manufacture NETL <u-so>

1.3 ONSHORE PIPELINE DEINSTALLATION

US: DIESEL, NATIONAL AVERAGE, 2009 NETL <u-so>

US: ONSHORE PIPELINE DEINSTALLATION V 2.0 NETL

2.1 GAS PIPELINE, OPERATION

US: North American Average Electricity Mix, 2007 080811 NETL

US: Pipeline NG Operation 072611 NETL <u-so>

LC2 Marcellus Pipeline

1.3 ONSHORE PIPELINE CONST. & INSTALLATION V2.0

US: 1.3 ONSHORE PIPELINE, CONSTRUCTION & INSTALLATION V 2.0 NETL

US: DIESEL, NATIONAL AVERAGE, 2009 NETL <u-so>

WOR: Steel Pipe, Welded, BF, Manufacture NETL <u-so>

1.3 ONSHORE PIPELINE DEINSTALLATION

US: DIESEL, NATIONAL AVERAGE, 2009 NETL <u-so>

US: ONSHORE PIPELINE DEINSTALLATION V 2.0 NETL

2.1 GAS PIPELINE, OPERATION

US: North American Average Electricity Mix, 2007 080811 NETL

US: Pipeline NG Operation 072611 NETL <u-so>

LC2 Tight Sands Pipeline

1.3 ONSHORE PIPELINE CONST. & INSTALLATION V2.0

US: 1.3 ONSHORE PIPELINE, CONSTRUCTION & INSTALLATION V 2.0 NETL

US: DIESEL, NATIONAL AVERAGE, 2009 NETL <u-so>

WOR: Steel Pipe, Welded, BF, Manufacture NETL <u-so>

1.3 ONSHORE PIPELINE DEINSTALLATION

US: DIESEL, NATIONAL AVERAGE, 2009 NETL <u-so>

US: ONSHORE PIPELINE DEINSTALLATION V 2.0 NETL

2.1 GAS PIPELINE, OPERATION

US: North American Average Electricity Mix, 2007 080811 NETL

US: Pipeline NG Operation 072611 NETL <u-so>

US: NG Mixture NETL <u-so>

Parameters and Balances

The parameters for the highest level modeling plans for RMA and RMT of natural gas are shown in **Table 3**. These parameters may or may not include the adjustable parameters shown previously depending on how the model was created. **Table 4** presents the input and output balances for resources and emissions of interest for the cradle-to-gate plan as well as each of the RMA and RMT plans.

Table 3: Adjustable Parameters for RMA and RMT of Natural Gas

Plan	Parameter	Value	Comment
LC Stage #1			
NG Mixture	associated	0.0660	[decimal] proportion of US natural gas extracted by a well associated with petroleum extraction
NG Mixture	barnett	0.2107	[decimal] proportion of US natural gas extracted from Barnett Shale extraction
NG Mixture	coal	0.0938	[decimal] proportion of US natural gas extracted from coalbed methane extraction
NG Mixture	lng	0.0000	[decimal] proportion of US natural gas imported as liquifed natural gas
NG Mixture	marcellus	0.0245	[decimal] proportion of US natural gas extracted from Marcellus Shale extraction
NG Mixture	offshore	0.1207	[decimal] proportion of US natural gas extracted from conventional offshore extraction
NG Mixture	onshore	0.2164	[decimal] proportion of US natural gas extracted from conventional onshore extraction
NG Mixture	tightsand	0.2678	[decimal] proportion of US natural gas extracted from tight sands extraction

Table 4: Inputs and Output Balances for Cradle-to-Gate, RMA, and RMT of Natural Gas (kg/kg delivered)

Process or Category	Cradle to Gate	Cradle to Gate (RMA)	Gate to Gate (RMT)
Inputs			
Flows	2.369E+00	2.354E+00	1.490E-02

Process or Category	Cradle to Gate	Cradle to Gate (RMA)	Gate to Gate (RMT)
Resources	2.369E+00	2.354E+00	1.490E-02
Energy resources	1.123E+00	1.123E+00	2.707E-04
Non renewable energy resources	1.123E+00	1.123E+00	2.707E-04
Crude oil (resource)	4.627E-04	4.341E-04	2.860E-05
Crude oil	1.879E-04	1.732E-04	1.475E-05
Crude oil Algeria	5.133E-06	4.857E-06	2.754E-07
Crude oil Angola	1.034E-05	9.803E-06	5.372E-07
Crude oil Argentina	4.703E-07	4.499E-07	2.040E-08
Crude oil Australia	2.980E-07	2.851E-07	1.293E-08
Crude oil Austria	3.978E-09	3.793E-09	1.844E-10
Crude oil Bolivia	6.925E-13	6.631E-13	2.938E-14
Crude oil Brazil	3.958E-07	3.787E-07	1.715E-08
Crude oil Brunei	3.102E-13	2.954E-13	1.481E-14
Crude oil Bulgaria	9.889E-13	9.510E-13	3.791E-14
Crude oil Cameroon	8.844E-08	8.456E-08	3.881E-09
Crude oil Canada	2.000E-05	1.901E-05	9.864E-07
Crude oil Central Africa	0.000E+00	0.000E+00	0.000E+00
Crude oil Central America	0.000E+00	0.000E+00	0.000E+00
Crude oil Chile	3.663E-12	3.502E-12	1.608E-13
Crude oil China	1.196E-07	1.145E-07	5.189E-09
Crude oil CIS	1.194E-06	1.142E-06	5.244E-08
Crude oil Colombia	1.537E-06	1.471E-06	6.667E-08
Crude oil Czech Republic	4.826E-10	4.611E-10	2.145E-11
Crude oil Denmark	1.472E-07	1.406E-07	6.652E-09
Crude oil Ecuador	4.298E-06	4.073E-06	2.248E-07
Crude oil Egypt	1.486E-08	1.417E-08	6.929E-10
Crude oil France	5.108E-09	4.869E-09	2.393E-10
Crude oil Gabon	1.096E-06	1.048E-06	4.754E-08
Crude oil Germany	2.907E-08	2.783E-08	1.234E-09
Crude oil Greece	7.253E-10	6.914E-10	3.391E-11
Crude oil Hungary	5.460E-10	5.230E-10	2.296E-11
Crude oil India	5.134E-12	4.943E-12	1.910E-13
Crude oil Indonesia	3.080E-07	2.946E-07	1.336E-08
Crude oil Iran	1.110E-07	1.059E-07	5.096E-09
Crude oil Iraq	1.161E-05	1.102E-05	5.953E-07
Crude oil Ireland	3.954E-14	3.785E-14	1.683E-15

Process or Category	Cradle to Gate	Cradle to Gate (RMA)	Gate to Gate (RMT)
Crude oil Italy	2.330E-08	2.222E-08	1.085E-09
Crude oil Kuwait	4.903E-06	4.653E-06	2.506E-07
Crude oil Libya	1.902E-07	1.817E-07	8.551E-09
Crude oil Malaysia	1.592E-13	1.517E-13	7.530E-15
Crude oil Mexico	3.134E-05	2.974E-05	1.593E-06
Crude oil Middle East	0.000E+00	0.000E+00	0.000E+00
Crude oil Netherlands	1.631E-08	1.557E-08	7.386E-10
Crude oil New Zealand	8.113E-10	7.759E-10	3.537E-11
Crude oil Nigeria	1.964E-05	1.862E-05	1.021E-06
Crude oil North Africa	0.000E+00	0.000E+00	0.000E+00
Crude oil Norway	2.842E-06	2.718E-06	1.239E-07
Crude oil Oman	1.020E-07	9.754E-08	4.424E-09
Crude oil Poland	1.455E-09	1.392E-09	6.268E-11
Crude oil Qatar	5.584E-08	5.342E-08	2.420E-09
Crude oil Romania	1.621E-09	1.546E-09	7.504E-11
Crude oil Saudi Arabia	2.942E-05	2.794E-05	1.488E-06
Crude oil Slovakia	3.370E-12	3.229E-12	1.411E-13
Crude oil South Africa	5.308E-14	5.085E-14	2.227E-15
Crude oil Spain	1.156E-09	1.102E-09	5.430E-11
Crude oil Syria	5.016E-12	4.826E-12	1.904E-13
Crude oil Trinidad and Tobago	4.144E-07	3.964E-07	1.797E-08
Crude oil Tunisia	7.329E-09	6.995E-09	3.336E-10
Crude oil Turkey	6.973E-16	6.681E-16	2.918E-17
Crude oil United Arab Emirates	5.685E-08	5.438E-08	2.466E-09
Crude oil United Kingdom	3.114E-06	2.977E-06	1.366E-07
Crude oil USA	9.741E-05	9.249E-05	4.915E-06
Crude oil Venezuela	2.799E-05	2.658E-05	1.414E-06
Hard coal (resource)	3.481E-03	3.302E-03	1.787E-04
Hard coal	3.287E-09	3.142E-09	1.448E-10
Hard Coal (Illinois No 6)	2.269E-03	2.184E-03	8.433E-05
Hard coal Australia	1.149E-07	1.104E-07	4.527E-09
Hard coal Belgium	8.560E-11	8.223E-11	3.370E-12
Hard coal Bosnia and Herzegovina	9.888E-09	9.471E-09	4.170E-10
Hard coal Brazil	1.193E-09	1.146E-09	4.695E-11
Hard coal Canada	3.113E-07	2.970E-07	1.432E-08
Hard coal Chile	3.844E-10	3.676E-10	1.687E-11

Process or Category	Cradle to Gate	Cradle to Gate (RMA)	Gate to Gate (RMT)
Hard coal China	1.464E-08	1.403E-08	6.160E-10
Hard coal CIS	5.331E-08	5.112E-08	2.196E-09
Hard coal Colombia	2.912E-07	2.788E-07	1.232E-08
Hard coal Czech Republic	1.218E-08	1.170E-08	4.741E-10
Hard coal France	2.067E-09	1.984E-09	8.297E-11
Hard coal Germany	2.531E-07	2.434E-07	9.723E-09
Hard coal India	3.809E-10	3.668E-10	1.417E-11
Hard coal Indonesia	5.886E-08	5.639E-08	2.465E-09
Hard coal Italy	6.373E-11	6.115E-11	2.574E-12
Hard coal Japan	1.095E-14	1.050E-14	4.453E-16
Hard coal Malaysia	5.975E-15	5.697E-15	2.782E-16
Hard coal Mexico	1.129E-08	1.078E-08	5.086E-10
Hard coal New Zealand	3.126E-10	2.989E-10	1.372E-11
Hard coal Poland	7.354E-08	7.068E-08	2.863E-09
Hard coal Portugal	4.246E-13	4.058E-13	1.872E-14
Hard coal South Africa	1.135E-07	1.090E-07	4.578E-09
Hard coal Spain	8.235E-09	7.881E-09	3.546E-10
Hard coal Turkey	3.004E-12	2.878E-12	1.257E-13
Hard coal United Kingdom	2.442E-08	2.339E-08	1.024E-09
Hard coal USA	1.210E-03	1.116E-03	9.427E-05
Hard coal Venezuela	9.781E-08	9.365E-08	4.153E-09
Hard coal Vietnam	1.085E-09	1.042E-09	4.234E-11
Hard Coal, Pure, Fuel	2.112E-08	2.033E-08	7.863E-10
Hard Coal, Raw, Fuel	1.654E-07	1.592E-07	6.157E-09
Lignite (resource)	3.060E-06	2.920E-06	1.402E-07
Lignite	1.889E-09	1.817E-09	7.244E-11
Lignite Australia	1.617E-08	1.545E-08	7.251E-10
Lignite Austria	5.051E-10	4.828E-10	2.224E-11
Lignite Bosnia and Herzegovina	2.284E-08	2.188E-08	9.631E-10
Lignite Bulgaria	2.257E-09	2.163E-09	9.367E-11
Lignite Canada	9.201E-08	8.741E-08	4.603E-09
Lignite CIS	2.701E-09	2.593E-09	1.086E-10
Lignite Czech Republic	1.090E-08	1.049E-08	4.082E-10
Lignite France	6.754E-10	6.485E-10	2.686E-11
Lignite Germany	5.305E-11	5.127E-11	1.777E-12
Lignite Germany (Central Germany)	5.789E-07	5.555E-07	2.339E-08

Process or Category	Cradle to Gate	Cradle to Gate (RMA)	Gate to Gate (RMT)
Lignite Germany (Lausitz)	1.889E-07	1.819E-07	7.047E-09
Lignite Germany (Rheinisch)	3.417E-07	3.289E-07	1.279E-08
Lignite Greece	8.650E-08	8.288E-08	3.622E-09
Lignite Hungary	1.357E-09	1.306E-09	5.142E-11
Lignite India	7.621E-11	7.337E-11	2.834E-12
Lignite Macedonia	1.476E-09	1.415E-09	6.098E-11
Lignite Poland	8.140E-09	7.825E-09	3.150E-10
Lignite Romania	3.158E-11	3.039E-11	1.194E-12
Lignite Serbia and Montenegro	1.232E-09	1.186E-09	4.630E-11
Lignite Slovakia	3.862E-09	3.700E-09	1.619E-10
Lignite Slovenia	2.608E-08	2.499E-08	1.096E-09
Lignite Spain	1.733E-08	1.658E-08	7.459E-10
Lignite Turkey	8.645E-14	8.283E-14	3.617E-15
Lignite USA	1.654E-06	1.571E-06	8.381E-08
Natural gas (resource)	1.119E+00	1.119E+00	6.330E-05
Natural gas	7.766E-09	7.424E-09	3.418E-10
Natural gas Algeria	4.742E-07	4.497E-07	2.458E-08
Natural gas Angola	1.272E-06	1.206E-06	6.597E-08
Natural gas Argentina	3.706E-08	3.555E-08	1.515E-09
Natural gas Australia	2.033E-08	1.944E-08	8.844E-10
Natural gas Austria	1.064E-09	1.028E-09	3.630E-11
Natural gas Bolivia	1.392E-09	1.333E-09	5.905E-11
Natural gas Brazil	3.917E-08	3.756E-08	1.618E-09
Natural gas Brunei	2.698E-09	2.570E-09	1.287E-10
Natural gas Bulgaria	4.241E-13	4.067E-13	1.739E-14
Natural gas Cameroon	2.200E-08	2.103E-08	9.645E-10
Natural gas Canada	7.011E-06	6.665E-06	3.465E-07
Natural gas Chile	8.661E-10	8.280E-10	3.806E-11
Natural gas China	1.059E-08	1.016E-08	4.336E-10
Natural gas CIS	3.054E-07	2.935E-07	1.194E-08
Natural gas Colombia	1.274E-07	1.222E-07	5.181E-09
Natural gas Czech Republic	9.047E-11	8.759E-11	2.878E-12
Natural gas Denmark	2.605E-08	2.506E-08	9.929E-10
Natural gas Ecuador	2.822E-07	2.678E-07	1.445E-08
Natural gas Egypt	1.446E-09	1.378E-09	6.795E-11
Natural gas France	3.923E-09	3.773E-09	1.501E-10

Process or Category	Cradle to Gate	Cradle to Gate (RMA)	Gate to Gate (RMT)
Natural gas Gabon	1.599E-07	1.530E-07	6.921E-09
Natural gas Germany	1.393E-07	1.339E-07	5.416E-09
Natural gas Greece	8.708E-11	8.319E-11	3.887E-12
Natural gas Hungary	1.017E-09	9.923E-10	2.512E-11
Natural gas India	2.919E-11	2.810E-11	1.086E-12
Natural gas Indonesia	1.697E-08	1.622E-08	7.493E-10
Natural gas Iran	1.228E-08	1.172E-08	5.681E-10
Natural gas Iraq	5.765E-07	5.485E-07	2.804E-08
Natural gas Ireland	9.012E-11	8.629E-11	3.828E-12
Natural gas Italy	9.684E-09	9.294E-09	3.899E-10
Natural gas Japan	3.226E-15	3.095E-15	1.307E-16
Natural gas Kuwait	2.253E-07	2.145E-07	1.085E-08
Natural gas Libyan	6.091E-09	5.825E-09	2.667E-10
Natural gas Malaysia	2.656E-09	2.529E-09	1.269E-10
Natural gas Mexico	2.044E-06	1.944E-06	9.986E-08
Natural gas Netherlands	2.144E-07	2.061E-07	8.255E-09
Natural gas New Zealand	5.260E-11	5.030E-11	2.302E-12
Natural gas Nigeria	3.512E-06	3.330E-06	1.822E-07
Natural gas Norway	2.198E-07	2.112E-07	8.683E-09
Natural gas Oman	1.165E-08	1.115E-08	4.950E-10
Natural gas Poland	7.067E-10	6.878E-10	1.893E-11
Natural gas Qatar	4.494E-08	4.283E-08	2.112E-09
Natural gas Romania	1.016E-10	9.692E-11	4.723E-12
Natural gas Saudi Arabia	1.322E-06	1.259E-06	6.231E-08
Natural gas Slovakia	1.018E-10	9.899E-11	2.778E-12
Natural gas South Africa	6.238E-12	5.961E-12	2.773E-13
Natural gas Spain	2.794E-10	2.669E-10	1.244E-11
Natural gas Syria	5.391E-13	5.186E-13	2.046E-14
Natural gas Trinidad and Tobago	2.278E-07	2.172E-07	1.055E-08
Natural gas Tunisia	9.211E-10	8.789E-10	4.224E-11
Natural gas Turkey	7.052E-17	6.757E-17	2.951E-18
Natural gas United Arab Emirates	4.558E-09	4.373E-09	1.846E-10
Natural gas United Kingdom	2.335E-07	2.240E-07	9.517E-09
Natural gas USA	1.744E-02	1.741E-02	2.898E-05
Natural gas Venezuela	1.483E-06	1.412E-06	7.110E-08
Natural Gas, Fuel	6.595E-08	6.350E-08	2.455E-09

Process or Category	Cradle to Gate	Cradle to Gate (RMA)	Gate to Gate (RMT)
Natural gas, Raw Material	1.102E+00	1.102E+00	3.333E-05
Pit gas	7.958E-13	7.699E-13	2.596E-14
Pit Methane	1.058E-07	1.014E-07	4.440E-09
Uranium (resource)	3.950E-10	3.767E-10	1.826E-11
Nuclear energy	0.000E+00	0.000E+00	0.000E+00
Uranium natural	3.950E-10	3.767E-10	1.826E-11
Renewable energy resources	1.363E-08	1.311E-08	5.149E-10
Biomass	1.067E-09	1.024E-09	4.319E-11
Energy, gross calorific value, in biomass, primary forest	0.000E+00	0.000E+00	0.000E+00
Primary energy from geothermics	0.000E+00	0.000E+00	0.000E+00
Primary energy from hydro power	0.000E+00	0.000E+00	0.000E+00
Primary energy from solar energy	0.000E+00	0.000E+00	0.000E+00
Primary energy from waves	0.000E+00	0.000E+00	0.000E+00
Primary energy from wind power	0.000E+00	0.000E+00	0.000E+00
Renewable fuels	3.086E-14	2.985E-14	1.009E-15
Wood	1.256E-08	1.209E-08	4.717E-10
Unspecified	0.000E+00	0.000E+00	0.000E+00
Energy unspecified (APME)	0.000E+00	0.000E+00	0.000E+00
Land use	0.000E+00	0.000E+00	0.000E+00
Hemerobie ecoinvent	0.000E+00	0.000E+00	0.000E+00
Transformation, from unknown	0.000E+00	0.000E+00	0.000E+00
Transformation, to mineral extraction site	0.000E+00	0.000E+00	0.000E+00
Occupation	0.000E+00	0.000E+00	0.000E+00
Biotic Production	0.000E+00	0.000E+00	0.000E+00
Erosion Resistance	0.000E+00	0.000E+00	0.000E+00
Groundwater Replenishment	0.000E+00	0.000E+00	0.000E+00
Mechanical Filtration	0.000E+00	0.000E+00	0.000E+00
Physicochemical Filtration	0.000E+00	0.000E+00	0.000E+00
Transformation	0.000E+00	0.000E+00	0.000E+00
Biotic Production	0.000E+00	0.000E+00	0.000E+00
Erosion Resistance	0.000E+00	0.000E+00	0.000E+00
Groundwater Replenishment	0.000E+00	0.000E+00	0.000E+00
Mechanical Filtration	0.000E+00	0.000E+00	0.000E+00
Physicochemical Filtration	0.000E+00	0.000E+00	0.000E+00
Material resources	1.245E+00	1.231E+00	1.463E-02
Non renewable elements	1.959E-03	1.805E-03	1.541E-04

Process or Category	Cradle to Gate	Cradle to Gate (RMA)	Gate to Gate (RMT)
Aluminum	6.683E-11	6.434E-11	2.488E-12
Chromium	4.835E-14	4.628E-14	2.061E-15
Copper	7.277E-14	7.005E-14	2.726E-15
Iron	1.948E-03	1.795E-03	1.532E-04
Lead	2.644E-14	2.530E-14	1.146E-15
Magnesium	5.472E-17	5.237E-17	2.346E-18
Mercury	1.558E-14	1.492E-14	6.568E-16
Nickel	2.025E-16	1.940E-16	8.505E-18
Phosphorus	5.469E-12	5.234E-12	2.345E-13
Sulphur	3.311E-11	3.158E-11	1.529E-12
Zinc	1.085E-05	9.993E-06	8.530E-07
Non renewable resources	5.802E-04	5.436E-04	3.665E-05
Barium sulphate	3.641E-18	3.493E-18	1.476E-19
Basalt	3.885E-08	3.704E-08	1.810E-09
Bauxite	8.585E-07	8.224E-07	3.611E-08
Bentonite	1.261E-06	1.198E-06	6.296E-08
Calcium carbonate (CaCO3)	4.349E-07	4.187E-07	1.619E-08
Calcium chloride	3.727E-16	3.576E-16	1.511E-17
Chalk (Calciumcarbonate)	2.432E-40	2.339E-40	9.331E-42
Chromium ore (39%)	1.686E-08	1.623E-08	6.269E-10
Clay	1.983E-07	1.898E-07	8.439E-09
Colemanite ore	2.560E-09	2.465E-09	9.519E-11
Copper - Gold - Silver - ore (1,0% Cu; 0,4 g/t Au; 66 g/t Ag)	2.210E-07	2.128E-07	8.216E-09
Copper - Gold - Silver - ore (1,1% Cu; 0,01 g/t Au; 2,86 g/t Ag)	1.346E-07	1.296E-07	5.005E-09
Copper - Gold - Silver - ore (1,16% Cu; 0,002 g/t Au; 1,06 g/t Ag)	7.599E-08	7.317E-08	2.825E-09
Copper - Molybdenum - Gold - Silver - ore (1,13% Cu; 0,02% Mo; 0,01 g/t Au; 2,86 g/t Ag)	3.421E-08	3.294E-08	1.272E-09
Copper ore (0.14%)	4.796E-07	4.618E-07	1.779E-08
Copper ore (1.2%)	2.292E-08	2.207E-08	8.520E-10
Copper ore (4%)	2.393E-18	2.298E-18	9.485E-20
Copper ore (sulphidic, 1.1%)	2.982E-08	2.871E-08	1.110E-09
Dolomite	1.050E-04	9.678E-05	8.262E-06
Feldspar (aluminum silicates)	3.856E-12	3.691E-12	1.653E-13
Ferro manganese	8.780E-15	8.406E-15	3.745E-16
Fluorspar (calcium fluoride; fluorite)	6.446E-09	6.175E-09	2.710E-10

Process or Category	Cradle to Gate	Cradle to Gate (RMA)	Gate to Gate (RMT)
Granite	1.155E-21	1.106E-21	4.888E-23
Gravel	2.383E-06	2.294E-06	8.857E-08
Gypsum (natural gypsum)	1.225E-07	1.173E-07	5.134E-09
Heavy spar (BaSO4)	3.041E-06	2.889E-06	1.519E-07
Ilmenite (titanium ore)	4.443E-12	4.279E-12	1.642E-13
Inert rock	2.200E-04	2.102E-04	9.840E-06
Iron ore (56,86%)	1.532E-06	1.463E-06	6.921E-08
Iron ore (65%)	5.851E-10	5.629E-10	2.219E-11
Kaolin ore	4.595E-09	4.424E-09	1.709E-10
Lead - zinc ore (4.6%-0.6%)	2.625E-07	2.495E-07	1.301E-08
Limestone (calcium carbonate)	2.237E-04	2.064E-04	1.730E-05
Magnesit (Magnesium carbonate)	3.094E-12	2.967E-12	1.265E-13
Magnesium chloride leach (40%)	4.210E-08	4.091E-08	1.187E-09
Manganese ore	3.293E-09	3.171E-09	1.225E-10
Manganese ore (R.O.M.)	2.194E-08	2.100E-08	9.386E-10
Molybdenite (Mo 0,24%)	2.089E-08	2.011E-08	7.769E-10
Molybdenum ore (0.1%)	3.105E-10	2.990E-10	1.154E-11
Natural Aggregate	1.555E-05	1.497E-05	5.807E-07
Nickel ore (1,5%)	5.258E-10	5.062E-10	1.954E-11
Nickel ore (1.6%)	6.272E-08	5.996E-08	2.760E-09
Olivine	9.149E-14	8.759E-14	3.902E-15
Peat	2.647E-09	2.527E-09	1.202E-10
Phosphate ore	1.760E-12	1.677E-12	8.346E-14
Phosphorus minerals	1.801E-10	1.706E-10	9.542E-12
Phosphorus ore (29% P2O5)	2.674E-12	2.674E-12	1.672E-16
Potassium chloride	6.996E-11	6.696E-11	3.003E-12
Precious metal ore (R.O.M)	8.461E-10	8.146E-10	3.147E-11
Quartz sand (silica sand; silicon dioxide)	3.654E-07	3.516E-07	1.386E-08
Raw pumice	4.455E-10	4.290E-10	1.656E-11
Rutile (titanium ore)	5.569E-13	5.266E-13	3.028E-14
sand	1.315E-11	1.259E-11	5.631E-13
Slate	1.748E-13	1.672E-13	7.591E-15
Sodium chloride (rock salt)	1.117E-06	1.078E-06	3.894E-08
Sodium nitrate	1.333E-20	1.282E-20	5.120E-22
Sodium sulphate	1.757E-12	1.725E-12	3.255E-14
Soil	2.904E-06	2.796E-06	1.087E-07

Process or Category	Cradle to Gate	Cradle to Gate (RMA)	Gate to Gate (RMT)
Sulphur (bonded)	4.681E-14	4.502E-14	1.781E-15
Talc	7.769E-11	7.480E-11	2.893E-12
Tin ore	3.157E-19	3.029E-19	1.280E-20
Titanium ore	1.050E-08	1.007E-08	4.308E-10
Zinc - copper ore (4.07%-2.59%)	1.186E-07	1.137E-07	4.909E-09
Zinc - lead - copper ore (12%-3%-2%)	7.292E-08	6.998E-08	2.945E-09
Zinc - lead ore (4.21%-4.96%)	8.170E-19	7.847E-19	3.239E-20
Zinc ore (4%)	-2.187E-09	-2.102E-09	-8.540E-11
Zinc ore (sulphidic, 4%)	1.064E-17	1.024E-17	4.052E-19
Renewable resources	1.243E+00	1.228E+00	1.444E-02
Water	1.241E+00	1.227E+00	1.439E-02
Water	1.265E-03	1.197E-03	6.863E-05
Water (feed water)	0.000E+00	2.140E-10	0.000E+00
Water (ground water)	5.828E-01	5.782E-01	4.535E-03
Water (lake water)	1.827E-02	1.827E-02	8.098E-08
Water (municipal)	1.941E-06	1.869E-06	7.216E-08
Water (sea water)	2.481E-06	2.357E-06	1.239E-07
Water (surface water)	6.382E-01	6.284E-01	9.750E-03
Water (wastewater)	0.000E+00	0.000E+00	0.000E+00
Water (well water)	3.920E-08	3.752E-08	1.677E-09
Water (well-produced water)	9.635E-04	9.277E-04	3.581E-05
Water (with river silt)	4.357E-17	4.351E-17	6.358E-20
Water,turbine use, unspecified natural origin	0.000E+00	0.000E+00	0.000E+00
Air	1.449E-03	1.396E-03	5.350E-05
Carbon dioxide	4.223E-07	4.050E-07	1.727E-08
Nitrogen	1.098E-09	1.050E-09	4.805E-11
Oxygen	0.000E+00	0.000E+00	0.000E+00
Unspecified	1.918E-08	1.846E-08	7.139E-10
Unspecified minerals	4.363E-09	4.200E-09	1.624E-10
Unspecified resources	1.481E-08	1.426E-08	5.515E-10
Output			
Flows	1.662E+00	1.620E+00	4.154E-02
Resources	1.446E+00	1.436E+00	9.430E-03
Energy resources	0.000E+00	0.000E+00	0.000E+00
Non renewable energy resources	0.000E+00	0.000E+00	0.000E+00
Natural gas (resource)	0.000E+00	0.000E+00	0.000E+00

Process or Category	Cradle to Gate	Cradle to Gate (RMA)	Gate to Gate (RMT)
Natural gas USA	0.000E+00	0.000E+00	0.000E+00
Natural gas, Raw Material	0.000E+00	0.000E+00	0.000E+00
Non Renewable Energy	0.000E+00	0.000E+00	0.000E+00
Renewable energy resources	0.000E+00	0.000E+00	0.000E+00
Feedstock Energy	0.000E+00	0.000E+00	0.000E+00
Renewable Energy	0.000E+00	0.000E+00	0.000E+00
Total Primary Energy	0.000E+00	0.000E+00	0.000E+00
Land use	0.000E+00	0.000E+00	0.000E+00
Hemeroby	0.000E+00	0.000E+00	0.000E+00
Occup. as Forest land	0.000E+00	0.000E+00	0.000E+00
Material resources	1.446E+00	1.436E+00	9.430E-03
Renewable resources	1.446E+00	1.436E+00	9.430E-03
Water	1.446E+00	1.436E+00	9.430E-03
Water (feed water)	4.265E-06	4.109E-06	1.565E-07
Water (river water)	2.509E-01	2.417E-01	9.234E-03
Water (wastewater)	1.190E+00	1.190E+00	3.624E-05
Water (wastewater)	4.276E-03	4.117E-03	1.589E-04
Nitrogen	0.000E+00	0.000E+00	0.000E+00
Oxygen	4.219E-08	4.153E-08	6.621E-10
Ecoinvent	5.250E-06	5.061E-06	1.898E-07
Long-term emission	5.250E-06	5.061E-06	1.898E-07
Fresh water	5.250E-06	5.061E-06	1.898E-07
Chloride	5.106E-06	4.916E-06	1.898E-07
Dissolved organic carbon, DOC (Ecoinvent)	7.923E-13	7.628E-13	2.950E-14
Total organic carbon, TOC (Ecoinvent)	1.448E-07	1.448E-07	0.000E+00
Production residues in life cycle	1.094E-06	1.051E-06	4.301E-08
Hazardous waste for disposal	2.414E-07	2.313E-07	1.018E-08
Chromium containing slag	3.086E-11	2.972E-11	1.147E-12
Dross (Fines)	1.593E-09	1.526E-09	6.725E-11
Natrium oxide	2.709E-09	2.595E-09	1.143E-10
Red mud (dry)	2.354E-07	2.254E-07	9.933E-09
Soil and sand containing heavy metals	1.504E-09	1.448E-09	5.599E-11
Toxic chemicals (unspecified)	2.495E-10	2.388E-10	1.071E-11
Hazardous waste for recovery	8.521E-08	8.464E-08	5.684E-10
Used oil	4.285E-10	4.104E-10	1.808E-11
Waste water processing residue	8.478E-08	8.423E-08	5.503E-10

Process or Category	Cradle to Gate	Cradle to Gate (RMA)	Gate to Gate (RMT)
Waste for disposal	6.352E-07	6.092E-07	2.600E-08
Incineration good	1.405E-10	1.345E-10	6.008E-12
Sludge from water works (6% dry matter-content)	2.378E-09	2.378E-09	2.146E-13
Waste (solid)	2.248E-07	2.146E-07	1.012E-08
Waste for disposal (unspecified)	3.025E-10	2.913E-10	1.124E-11
Waste from steel works	4.076E-07	3.917E-07	1.586E-08
Waste for recovery	1.074E-07	1.021E-07	5.347E-09
Aluminum scrap	1.235E-15	1.171E-15	6.389E-17
Boiler ash (unspecified)	0.000E+00	0.000E+00	0.000E+00
Chemicals (unspecified)	7.159E-11	6.850E-11	3.092E-12
Cooling water	8.189E-08	7.751E-08	4.379E-09
Cryolite	7.429E-10	7.115E-10	3.135E-11
Dross	1.845E-10	1.750E-10	9.549E-12
Filter dust	4.899E-12	4.717E-12	1.821E-13
Fly ash (unspecified)	0.000E+00	0.000E+00	0.000E+00
Furnace clinker	1.225E-12	1.179E-12	4.553E-14
Gypsum	0.000E+00	0.000E+00	0.000E+00
Gypsum (contaminated)	1.954E-16	1.881E-16	7.262E-18
Gypsum (FDI)	3.924E-12	3.779E-12	1.450E-13
Plastic (unspecified)	1.453E-10	1.391E-10	6.209E-12
Production residues (unspecified)	1.529E-12	1.466E-12	6.279E-14
Rolling gravel	3.240E-10	3.119E-10	1.204E-11
Rolling tinder	6.859E-13	6.604E-13	2.549E-14
Slag	8.446E-09	8.120E-09	3.255E-10
Slag (containing precious metal)	4.531E-13	4.362E-13	1.684E-14
Slag (Iron plate production)	1.027E-08	9.884E-09	3.816E-10
Slag (Mn 6,5%)	5.331E-09	5.133E-09	1.982E-10
Waste paper	7.037E-13	6.775E-13	2.628E-14
Wood	7.485E-13	7.203E-13	2.828E-14
Wooden pallet (EURO)	4.142E-19	3.964E-19	1.780E-20
Mixed Waste (Hazardous or Radioactive)	2.449E-08	2.358E-08	9.103E-10
Neutralized residues	7.156E-13	6.891E-13	2.644E-14
Emissions to air	1.942E-01	1.621E-01	3.211E-02
Heavy metals to air	8.668E-08	7.991E-08	6.766E-09
Antimony	8.198E-13	7.860E-13	3.377E-14
Arsenic (+V)	2.970E-11	2.854E-11	1.153E-12

Process or Category	Cradle to Gate	Cradle to Gate (RMA)	Gate to Gate (RMT)
Arsenic trioxide	1.713E-16	1.628E-16	8.528E-18
Cadmium (+II)	3.750E-10	3.456E-10	2.940E-11
Chromium (+III)	9.484E-14	9.086E-14	3.978E-15
Chromium (+VI)	6.967E-16	6.708E-16	2.590E-17
Chromium (unspecified)	2.215E-09	2.042E-09	1.738E-10
Cobalt	4.069E-12	3.914E-12	1.552E-13
Copper (+II)	8.533E-12	8.194E-12	3.387E-13
Heavy metals to air (unspecified)	1.010E-12	9.728E-13	3.758E-14
Hydrogen arsenic (arsine)	1.422E-14	1.351E-14	7.079E-16
Iron	7.933E-12	7.630E-12	3.032E-13
Lanthanides	3.208E-16	3.082E-16	1.262E-17
Lead (+II)	1.431E-08	1.318E-08	1.123E-09
Manganese (+II)	9.423E-12	9.049E-12	3.734E-13
Mercury (+II)	5.231E-10	4.880E-10	3.512E-11
Molybdenum	7.403E-13	7.122E-13	2.810E-14
Nickel (+II)	9.287E-11	8.928E-11	3.595E-12
Palladium	1.032E-20	9.899E-21	4.182E-22
Rhodium	9.960E-21	9.556E-21	4.037E-22
Selenium	2.271E-11	2.175E-11	9.589E-13
Silver	5.620E-19	5.410E-19	2.101E-20
Tellurium	1.263E-14	1.210E-14	5.300E-16
Thallium	1.526E-13	1.492E-13	3.365E-15
Tin (+IV)	8.356E-12	8.005E-12	3.513E-13
Titanium	2.039E-14	1.959E-14	8.025E-16
Vanadium (+III)	8.349E-10	8.031E-10	3.175E-11
Zinc (+II)	6.824E-08	6.287E-08	5.365E-09
Inorganic emissions to air	1.724E-01	1.456E-01	2.684E-02
Ammonia	2.100E-08	7.477E-09	1.352E-08
Ammonium	7.922E-14	7.628E-14	2.945E-15
Ammonium nitrate	2.741E-16	2.637E-16	1.043E-17
Argon	1.312E-12	1.263E-12	4.877E-14
Barium	1.930E-09	1.833E-09	9.630E-11
Beryllium	6.885E-13	6.621E-13	2.640E-14
Boron compounds (unspecified)	1.623E-10	1.554E-10	6.941E-12
Bromine	6.720E-11	6.435E-11	2.858E-12
Carbon dioxide	1.681E-01	1.413E-01	2.681E-02

Process or Category	Cradle to Gate	Cradle to Gate (RMA)	Gate to Gate (RMT)
Carbon dioxide (biotic)	1.919E-07	1.833E-07	8.604E-09
Carbon dioxide (biotic)	9.276E-11	8.931E-11	3.448E-12
Carbon disulphide	1.040E-14	9.952E-15	4.467E-16
Carbon monoxide	2.997E-04	2.955E-04	4.236E-06
Carbon monoxide (biotic)	5.653E-13	5.442E-13	2.101E-14
Chloride (unspecified)	5.042E-11	4.846E-11	1.964E-12
Chlorine	2.467E-12	2.367E-12	1.006E-13
Cyanide (unspecified)	4.572E-12	4.399E-12	1.737E-13
Fluoride	1.337E-10	1.280E-10	5.664E-12
Fluorides	1.218E-12	1.157E-12	6.054E-14
Fluorine	6.843E-14	6.595E-14	2.484E-15
Helium	2.730E-12	2.621E-12	1.090E-13
Hydrogen	3.125E-10	3.023E-10	1.011E-11
Hydrogen bromine (hydrobromic acid)	5.999E-14	5.727E-14	2.715E-15
Hydrogen chloride	3.106E-07	2.877E-07	2.288E-08
Hydrogen cyanide (prussic acid)	7.981E-14	7.662E-14	3.185E-15
Hydrogen fluoride	3.042E-10	2.907E-10	1.357E-11
Hydrogen iodide	2.926E-17	2.811E-17	1.155E-18
Hydrogen phosphorous	5.398E-15	5.177E-15	2.204E-16
Hydrogen sulphide	1.541E-07	1.421E-07	1.205E-08
Lead dioxide	9.726E-13	9.364E-13	3.621E-14
Nitrogen (atmospheric nitrogen)	8.006E-05	8.006E-05	4.633E-09
Nitrogen (N-compounds)	2.566E-13	2.471E-13	9.539E-15
Nitrogen dioxide	1.686E-07	1.619E-07	6.713E-09
Nitrogen monoxide	1.045E-12	9.895E-13	5.531E-14
Nitrogen oxides	3.279E-03	3.274E-03	5.292E-06
Nitrous oxide (laughing gas)	4.596E-06	4.562E-06	3.348E-08
Oxygen	2.368E-07	2.262E-07	1.064E-08
Scandium	1.543E-16	1.482E-16	6.066E-18
Steam	5.565E-04	5.350E-04	2.155E-05
Strontium	6.083E-15	5.844E-15	2.392E-16
Sulphur dioxide	4.203E-05	3.989E-05	2.138E-06
Sulphur hexafluoride	1.643E-09	1.582E-09	6.107E-11
sulphur oxide	1.961E-08	3.576E-11	1.957E-08
Sulphuric acid	1.074E-12	1.023E-12	5.151E-14
Tin oxide	1.492E-16	1.436E-16	5.551E-18

Process or Category	Cradle to Gate	Cradle to Gate (RMA)	Gate to Gate (RMT)
Unspecified Particles	3.571E-08	3.438E-08	1.329E-09
Zinc oxide	2.983E-16	2.872E-16	1.110E-17
Zinc sulphate	3.575E-13	3.397E-13	1.780E-14
Organic emissions to air (group VOC)	2.067E-02	1.544E-02	5.222E-03
Group NMVOC to air	2.568E-03	2.568E-03	1.080E-07
Group PAH to air	1.561E-10	1.501E-10	5.999E-12
Anthracene	4.105E-14	3.894E-14	2.109E-15
Benzo{a}anthracene	2.065E-14	1.959E-14	1.061E-15
Benzo{a}pyrene	9.597E-11	9.240E-11	3.574E-12
Benzo{ghi}perylene	1.843E-14	1.748E-14	9.466E-16
Benzofluoranthene	3.685E-14	3.496E-14	1.893E-15
Chrysene	5.074E-14	4.813E-14	2.606E-15
Dibenz(a)anthracene	1.148E-14	1.089E-14	5.898E-16
Indeno[1,2,3-cd]pyrene	1.371E-14	1.300E-14	7.043E-16
Naphthalene	4.311E-12	4.090E-12	2.215E-13
Phenanthrene	1.354E-12	1.285E-12	6.957E-14
Polycyclic aromatic hydrocarbons (PAH)	5.424E-11	5.211E-11	2.124E-12
Halogenated organic emissions to air	3.849E-11	3.684E-11	1.652E-12
Dichloroethane (ethylene dichloride)	3.554E-14	3.421E-14	1.321E-15
Dichloromethane (methylene chloride)	8.221E-16	7.881E-16	3.394E-17
Dioxins (unspec.)	-1.716E-14	-1.577E-14	-1.389E-15
Halogenated hydrocarbons (unspecified)	8.173E-14	7.829E-14	3.442E-15
Halon (1301)	0.000E+00	0.000E+00	0.000E+00
Polychlorinated biphenyls (PCB unspecified)	3.117E-14	2.961E-14	1.552E-15
Polychlorinated dibenzo-p-dioxins (2,3,7,8 - TCDD)	4.364E-17	4.198E-17	1.661E-18
R 11 (trichlorofluoromethane)	2.858E-12	2.726E-12	1.324E-13
R 114 (dichlorotetrafluoroethane)	2.927E-12	2.792E-12	1.356E-13
R 116 (hexafluoroethane)	2.899E-12	2.777E-12	1.223E-13
R 12 (dichlorodifluoromethane)	6.145E-13	5.861E-13	2.847E-14
R 13 (chlorotrifluoromethane)	3.859E-13	3.680E-13	1.788E-14
R 22 (chlorodifluoromethane)	6.717E-13	6.406E-13	3.112E-14
Tetrafluoromethane	2.728E-11	2.614E-11	1.146E-12
Vinyl chloride (VCM; chloroethene)	7.218E-13	6.886E-13	3.320E-14
Acetaldehyde (Ethanal)	2.972E-10	2.861E-10	1.115E-11
Acetic acid	1.172E-09	1.128E-09	4.363E-11
Acetone (dimethylcetone)	2.964E-10	2.853E-10	1.111E-11

Process or Category	Cradle to Gate	Cradle to Gate (RMA)	Gate to Gate (RMT)
Acrolein	2.897E-13	2.748E-13	1.488E-14
Aldehyde (unspecified)	1.268E-12	1.215E-12	5.319E-14
Alkane (unspecified)	1.508E-09	1.450E-09	5.784E-11
Alkene (unspecified)	4.020E-10	3.854E-10	1.663E-11
Aromatic hydrocarbons (unspecified)	1.169E-10	1.126E-10	4.359E-12
Benzene	1.695E-10	1.628E-10	6.713E-12
Butadiene	6.102E-14	5.875E-14	2.268E-15
Butane	2.265E-08	2.150E-08	1.153E-09
Butane (n-butane)	9.337E-11	9.007E-11	3.303E-12
Caprolactam	1.340E-14	1.267E-14	7.287E-16
Cumene (isopropylbenzene)	4.348E-20	4.186E-20	1.616E-21
Cyclohexane (hexahydro benzene)	2.137E-14	2.043E-14	9.360E-16
Diethylamine	1.546E-18	1.488E-18	5.746E-20
Ethane	6.174E-08	5.860E-08	3.135E-09
Ethanol	5.839E-10	5.622E-10	2.177E-11
Ethene (ethylene)	5.774E-12	5.539E-12	2.356E-13
Ethyl benzene	3.450E-10	3.305E-10	1.452E-11
Fluoranthene	1.337E-13	1.268E-13	6.868E-15
Fluorene	4.243E-13	4.025E-13	2.180E-14
Formaldehyde (methanal)	1.026E-09	9.872E-10	3.841E-11
Heptane (isomers)	7.554E-10	7.168E-10	3.860E-11
Hexamethylene diamine (HMDA)	3.589E-15	3.456E-15	1.334E-16
Hexane (isomers)	1.131E-09	1.074E-09	5.784E-11
Mercaptan (unspecified)	6.909E-12	6.567E-12	3.414E-13
Methanethiol	9.079E-10	8.741E-10	3.380E-11
Methanol	5.824E-10	5.607E-10	2.170E-11
NMVOC (unspecified)	2.568E-03	2.568E-03	9.722E-08
Octane	4.155E-10	3.943E-10	2.123E-11
Pentane (n-pentane)	8.026E-09	7.621E-09	4.043E-10
Phenol (hydroxy benzene)	8.804E-15	8.473E-15	3.314E-16
Propane	1.109E-07	1.053E-07	5.647E-09
Propene (propylene)	3.127E-11	2.996E-11	1.316E-12
Propionic acid (propane acid)	7.347E-15	7.004E-15	3.429E-16
Styrene	9.114E-17	8.664E-17	4.506E-18
Toluene (methyl benzene)	1.680E-10	1.609E-10	7.176E-12
Trimethylbenzene	1.453E-15	1.399E-15	5.407E-17

Process or Category	Cradle to Gate	Cradle to Gate (RMA)	Gate to Gate (RMT)
Xylene (dimethyl benzene)	1.446E-09	1.385E-09	6.093E-11
Hydrocarbons (unspecified)	3.430E-09	3.302E-09	1.279E-10
Methane	1.810E-02	1.287E-02	5.222E-03
Methane (biotic)	2.482E-08	2.481E-08	1.367E-12
Organic chlorine compounds	9.591E-14	9.184E-14	4.068E-15
Unspecified Organic Compounds	2.482E-14	2.389E-14	9.239E-16
VOC (unspecified)	1.075E-06	7.157E-07	3.595E-07
Other emissions to air	1.141E-03	1.097E-03	4.363E-05
Aldehydes, unspecified	1.241E-14	1.195E-14	4.620E-16
Exhaust	1.115E-03	1.073E-03	4.253E-05
non used primary energy from wind power	0.000E+00	0.000E+00	0.000E+00
Particulate Matter, unspecified	8.331E-07	8.151E-09	8.250E-07
Sand (Silica) (SiO2)	2.366E-10	2.278E-10	8.807E-12
Unused primary energy from solar energy	0.000E+00	0.000E+00	0.000E+00
Used air	2.482E-05	2.454E-05	2.788E-07
Waste heat	0.000E+00	0.000E+00	0.000E+00
Particles to air	3.255E-05	3.210E-05	4.449E-07
Dust (PM10)	9.783E-06	9.781E-06	1.790E-09
Dust (PM2,5 - PM10)	6.558E-13	6.314E-13	2.438E-14
Dust (PM2.5)	2.173E-08	2.085E-08	8.706E-10
Dust (Portland cement kiln)	1.539E-05	1.539E-05	8.473E-10
Dust (unspecified)	7.356E-06	6.915E-06	4.414E-07
Metals (unspecified)	8.314E-13	8.001E-13	3.130E-14
Unspecified Organic Chlorine Compounds	1.637E-13	1.576E-13	6.096E-15
Wood (dust)	5.505E-14	5.300E-14	2.049E-15
Radioactive emissions to air	3.700E-12	3.531E-12	1.686E-13
Antimony (Sb124)	0.000E+00	0.000E+00	0.000E+00
Argon (Ar41)	0.000E+00	0.000E+00	0.000E+00
Carbon (C14)	0.000E+00	0.000E+00	0.000E+00
Cesium (Cs134)	0.000E+00	0.000E+00	0.000E+00
Cesium (Cs137)	0.000E+00	0.000E+00	0.000E+00
Cobalt (Co58)	0.000E+00	0.000E+00	0.000E+00
Cobalt (Co60)	0.000E+00	0.000E+00	0.000E+00
Hydrogen (H3)	0.000E+00	0.000E+00	0.000E+00
Iodine (I129)	0.000E+00	0.000E+00	0.000E+00
Iodine (I131)	0.000E+00	0.000E+00	0.000E+00

Process or Category	Cradle to Gate	Cradle to Gate (RMA)	Gate to Gate (RMT)
Krypton (Kr85)	0.000E+00	0.000E+00	0.000E+00
Krypton (Kr85m)	0.000E+00	0.000E+00	0.000E+00
Plutonium (Pu alpha)	0.000E+00	0.000E+00	0.000E+00
radionuclides	0.000E+00	0.000E+00	0.000E+00
Radon (Rn222)	0.000E+00	0.000E+00	0.000E+00
Uranium (total)	3.700E-12	3.531E-12	1.686E-13
Uranium (U234)	0.000E+00	0.000E+00	0.000E+00
Uranium (U235)	0.000E+00	0.000E+00	0.000E+00
Uranium (U238)	0.000E+00	0.000E+00	0.000E+00
Xenon (Xe131m)	0.000E+00	0.000E+00	0.000E+00
Xenon (Xe133)	0.000E+00	0.000E+00	0.000E+00
Xenon (Xe133m)	0.000E+00	0.000E+00	0.000E+00
Xenon (Xe135)	0.000E+00	0.000E+00	0.000E+00
Xenon (Xe135m)	0.000E+00	0.000E+00	0.000E+00
Xenon (Xe137)	0.000E+00	0.000E+00	0.000E+00
Xenon (Xe138)	0.000E+00	0.000E+00	0.000E+00
Unspecified Heavy Metals	1.279E-17	1.231E-17	4.761E-19
Emissions to fresh water	2.170E-02	2.169E-02	3.300E-06
Analytical measures to fresh water	8.540E-03	8.539E-03	1.426E-06
Adsorbable organic halogen compounds (AOX)	1.537E-10	1.471E-10	6.582E-12
Biological oxygen demand (BOD)	1.267E-04	1.267E-04	4.304E-09
Chemical oxygen demand (COD)	1.397E-06	1.293E-06	1.046E-07
Nitrogenous Matter (unspecified, as N)	6.024E-08	5.551E-08	4.736E-09
Solids (dissolved)	2.885E-05	2.778E-05	1.072E-06
Total Biochemical Oxygen Demand	3.061E-07	3.061E-07	0.000E+00
Total dissolved organic bounded carbon	7.818E-05	7.818E-05	2.563E-09
Total Dissolved Solids	8.304E-03	8.304E-03	2.375E-07
Total organic bounded carbon	2.994E-09	2.851E-09	1.431E-10
Total Suspended Solids	3.061E-07	3.061E-07	0.000E+00
Heavy metals to fresh water	2.339E-05	2.318E-05	2.129E-07
Aluminium	3.197E-07	3.024E-07	1.731E-08
Antimony	2.832E-09	2.679E-09	1.533E-10
Arsenic (+V)	2.095E-08	2.002E-08	9.328E-10
Cadmium (+II)	1.038E-09	9.791E-10	5.933E-11
Chromium (+III)	1.537E-11	1.479E-11	5.780E-13
Chromium (+VI)	6.147E-13	6.100E-13	4.675E-15

Process or Category	Cradle to Gate	Cradle to Gate (RMA)	Gate to Gate (RMT)
Chromium (unspecified)	2.441E-08	2.322E-08	1.189E-09
Cobalt	3.418E-13	3.251E-13	1.663E-14
Copper (+II)	2.730E-08	2.606E-08	1.238E-09
Heavy metals to water (unspecified)	3.966E-10	3.819E-10	1.474E-11
Iron	1.739E-06	1.672E-06	6.661E-08
Lead (+II)	3.233E-08	3.054E-08	1.790E-09
Manganese (+II)	1.822E-05	1.822E-05	6.654E-10
Mercury (+II)	1.547E-10	1.464E-10	8.367E-12
Molybdenum	1.153E-11	1.102E-11	5.082E-13
Nickel (+II)	7.908E-07	7.573E-07	3.354E-08
Selenium	4.038E-11	3.887E-11	1.514E-12
Silver	2.766E-09	2.616E-09	1.497E-10
Strontium	1.085E-09	1.034E-09	5.125E-11
Thallium	6.085E-15	5.785E-15	2.999E-16
Tin (+IV)	1.213E-12	1.154E-12	5.892E-14
Titanium	1.249E-12	1.193E-12	5.670E-14
Unspecified Substance	1.106E-13	1.065E-13	4.118E-15
Uranium	1.639E-06	1.579E-06	6.094E-08
Vanadium (+III)	5.472E-12	5.240E-12	2.326E-13
Zinc (+II)	5.682E-07	5.399E-07	2.829E-08
Inorganic emissions to fresh water	1.311E-02	1.311E-02	1.291E-06
Acid (calculated as H+)	2.993E-10	2.873E-10	1.196E-11
Acidity	0.000E+00	0.000E+00	0.000E+00
Aluminum (+III)	4.046E-09	3.893E-09	1.529E-10
Ammonia	2.387E-07	2.363E-07	2.426E-09
Ammonia, as N	3.004E-13	2.893E-13	1.117E-14
Ammonium (total N)	3.460E-06	3.273E-06	1.873E-07
Ammonium / ammonia	1.277E-06	1.230E-06	4.744E-08
Barium	3.529E-04	3.529E-04	9.963E-09
Beryllium	1.015E-14	9.681E-15	4.695E-16
Boron	5.705E-07	5.704E-07	3.197E-11
Bromate	1.090E-15	1.045E-15	4.502E-17
Bromine	2.131E-14	2.023E-14	1.072E-15
Calcium (+II)	1.650E-04	1.650E-04	1.151E-08
Carbonate	2.494E-03	2.494E-03	7.098E-08
Chlorate	9.199E-13	8.814E-13	3.849E-14

Process or Category	Cradle to Gate	Cradle to Gate (RMA)	Gate to Gate (RMT)
Chloride	2.387E-03	2.387E-03	1.483E-07
Chlorine (dissolved)	2.892E-08	2.784E-08	1.078E-09
Copper ion (+II/+III)	1.397E-14	1.345E-14	5.201E-16
Cyanide	2.573E-08	2.434E-08	1.393E-09
Fluoride	1.192E-07	1.144E-07	4.783E-09
Fluorine	5.646E-12	5.413E-12	2.329E-13
Hydrogen chloride	1.220E-13	1.170E-13	4.989E-15
Hydrogen fluoride (hydrofluoric acid)	2.714E-14	2.586E-14	1.276E-15
Hydrogen Ions (H+)	2.469E-11	2.377E-11	9.193E-13
Hydroxide	5.167E-10	4.949E-10	2.178E-11
Inorganic salts and acids (unspecified)	1.749E-21	1.687E-21	6.132E-23
Iron ion (+II/+III)	1.817E-12	1.750E-12	6.755E-14
Magnesium (+III)	3.292E-05	3.292E-05	1.379E-09
Magnesium chloride	2.807E-15	2.693E-15	1.137E-16
Metal ions (unspecific)	1.249E-11	1.182E-11	6.677E-13
Neutral salts	5.100E-15	4.961E-15	1.393E-16
Nickel ion (+III)	8.103E-14	7.802E-14	3.012E-15
Nitrate	9.925E-09	9.564E-09	3.603E-10
Nitrate (as total N)	3.966E-13	3.819E-13	1.477E-14
Nitrogen	3.946E-08	3.800E-08	1.467E-09
Nitrogen (as total N)	5.940E-06	5.940E-06	1.877E-10
Nitrogen organic bounded	5.216E-10	5.040E-10	1.762E-11
Phosphate	5.216E-11	5.014E-11	2.021E-12
Phosphorus	3.872E-07	3.705E-07	1.666E-08
Potassium	1.294E-11	1.232E-11	6.231E-13
Silicate particles	3.772E-07	3.772E-07	1.145E-11
Sodium (+I)	1.180E-03	1.180E-03	3.864E-08
Sodium chloride (rock salt)	6.015E-03	6.015E-03	1.978E-07
Sodium hypochlorite	8.428E-14	8.248E-14	1.801E-15
Sulfates	4.608E-04	4.607E-04	1.484E-08
Sulphate	1.435E-05	1.382E-05	5.340E-07
Sulphide	2.260E-09	2.144E-09	1.156E-10
Sulphite	7.909E-11	7.592E-11	3.170E-12
Sulphur	3.432E-11	3.265E-11	1.668E-12
Sulphur dioxide	2.438E-09	2.438E-09	0.000E+00
Sulphuric acid	1.573E-11	1.508E-11	6.432E-13

Process or Category	Cradle to Gate	Cradle to Gate (RMA)	Gate to Gate (RMT)
Unspecified Iron Oxides	2.832E-13	2.727E-13	1.054E-14
Unspecified Oil	1.003E-12	9.661E-13	3.736E-14
Unspecified Organic Chlorine compounds	2.274E-15	2.189E-15	8.466E-17
Unspecified Salt	9.099E-12	8.760E-12	3.387E-13
Unspecified Solids (Suspended)	3.532E-11	3.401E-11	1.315E-12
Organic emissions to fresh water	9.917E-06	9.845E-06	7.199E-08
Halogenated organic emissions to fresh water	2.430E-13	2.337E-13	9.313E-15
1,2-Dibromoethane	5.019E-18	4.800E-18	2.199E-19
Chlorinated hydrocarbons (unspecified)	1.375E-13	1.324E-13	5.112E-15
Chloromethane (methyl chloride)	9.569E-14	9.185E-14	3.838E-15
Dichloroethane (ethylene dichloride)	1.488E-15	1.433E-15	5.532E-17
Dichloropropane	2.881E-18	2.774E-18	1.071E-19
Polychlorinated dibenzo-p-dioxins (2,3,7,8 - TCDD)	4.846E-18	4.665E-18	1.801E-19
Vinyl chloride (VCM; chloroethene)	8.252E-15	7.945E-15	3.068E-16
Hydrocarbons to fresh water	9.913E-06	9.841E-06	7.178E-08
Acenaphthene	3.915E-14	3.716E-14	1.985E-15
Acenaphthylene	1.621E-14	1.538E-14	8.231E-16
Acetic acid	1.975E-12	1.889E-12	8.535E-14
Acrylonitrile	2.107E-13	2.029E-13	7.832E-15
Anthracene	5.266E-14	4.994E-14	2.714E-15
Aromatic hydrocarbons (unspecified)	2.924E-11	2.785E-11	1.393E-12
Benzene	7.650E-11	7.259E-11	3.904E-12
Benzo{a}anthracene	5.886E-15	5.590E-15	2.954E-16
Benzofluoranthene	3.545E-15	3.372E-15	1.733E-16
Chrysene	2.726E-14	2.590E-14	1.359E-15
Cresol (methyl phenol)	8.889E-13	8.457E-13	4.319E-14
Ethyl benzene	3.746E-12	3.555E-12	1.917E-13
Fluoranthene	6.781E-15	6.441E-15	3.400E-16
Hexane (isomers)	9.715E-14	9.243E-14	4.720E-15
Hydrocarbons (unspecified)	7.988E-06	7.988E-06	2.587E-10
Methanol	2.450E-09	2.391E-09	5.850E-11
Oil (unspecified)	1.922E-06	1.850E-06	7.143E-08
Phenol (hydroxy benzene)	6.833E-11	6.490E-11	3.431E-12
Polycyclic aromatic hydrocarbons (PAH, unspec.)	4.677E-10	4.503E-10	1.741E-11
Toluene (methyl benzene)	4.986E-11	4.733E-11	2.536E-12
Xylene (isomers; dimethyl benzene)	1.782E-11	1.695E-11	8.772E-13

Process or Category	Cradle to Gate	Cradle to Gate (RMA)	Gate to Gate (RMT)
Carbon, organically bound	3.816E-09	3.625E-09	1.908E-10
Naphthalene	2.446E-12	2.321E-12	1.249E-13
N-unspecified (N)	7.853E-13	7.561E-13	2.924E-14
Organic chlorine compounds (unspecified)	1.316E-14	1.259E-14	5.645E-16
Organic compounds (dissolved)	2.721E-12	2.587E-12	1.336E-13
Organic compounds (unspecified)	1.708E-12	1.635E-12	7.256E-14
Unspecified wastewater	5.938E-10	5.717E-10	2.211E-11
Other emissions to fresh water	0.000E+00	0.000E+00	0.000E+00
Detergent (unspecified)	0.000E+00	0.000E+00	0.000E+00
non used primary energy from water power	0.000E+00	0.000E+00	0.000E+00
Unused primary energy from geothermal	0.000E+00	0.000E+00	0.000E+00
Waste heat	0.000E+00	0.000E+00	0.000E+00
Waste water	0.000E+00	0.000E+00	0.000E+00
Particles to fresh water	6.489E-06	6.190E-06	2.983E-07
Metals (unspecified)	4.544E-12	4.373E-12	1.717E-13
Silicon dioxide (silica)	4.295E-12	4.135E-12	1.596E-13
Soil loss by erosion into water	4.791E-13	4.564E-13	2.267E-14
Solids (suspended)	6.489E-06	6.190E-06	2.983E-07
Suspended solids, unspecified	7.710E-11	7.410E-11	2.996E-12
Unspecified Oxides	2.355E-13	2.267E-13	8.766E-15
Radioactive emissions to fresh water	0.000E+00	0.000E+00	0.000E+00
Americium (Am241)	0.000E+00	0.000E+00	0.000E+00
Antimony (Sb124)	0.000E+00	0.000E+00	0.000E+00
Antimony (Sb125)	0.000E+00	0.000E+00	0.000E+00
Carbon (C14)	0.000E+00	0.000E+00	0.000E+00
Cesium (Cs134)	0.000E+00	0.000E+00	0.000E+00
Cesium (Cs137)	0.000E+00	0.000E+00	0.000E+00
Cobalt (Co58)	0.000E+00	0.000E+00	0.000E+00
Cobalt (Co60)	0.000E+00	0.000E+00	0.000E+00
Curium (Cm alpha)	0.000E+00	0.000E+00	0.000E+00
Hydrogen (H3)	0.000E+00	0.000E+00	0.000E+00
Iodine (I129)	0.000E+00	0.000E+00	0.000E+00
Iodine (I131)	0.000E+00	0.000E+00	0.000E+00
Manganese (Mn54)	0.000E+00	0.000E+00	0.000E+00
Plutonium (Pu alpha)	0.000E+00	0.000E+00	0.000E+00
Radionuclides	0.000E+00	0.000E+00	0.000E+00

Process or Category	Cradle to Gate	Cradle to Gate (RMA)	Gate to Gate (RMT)
Radium (Ra226)	0.000E+00	0.000E+00	0.000E+00
Ruthenium (Ru106)	0.000E+00	0.000E+00	0.000E+00
Silver (Ag110m)	0.000E+00	0.000E+00	0.000E+00
Strontium (Sr90)	0.000E+00	0.000E+00	0.000E+00
Thorium (Th234)	0.000E+00	0.000E+00	0.000E+00
Uranium	0.000E+00	0.000E+00	0.000E+00
Bromide	1.255E-06	1.255E-06	0.000E+00
Radionuclide	0.000E+00	0.000E+00	0.000E+00
Sulfite	4.743E-08	4.743E-08	0.000E+00
Unspecified Solids (Dissolved)	6.808E-11	6.555E-11	2.535E-12
Uranium (total)	1.523E-13	1.467E-13	5.662E-15
Emissions to sea water	4.085E-06	3.878E-06	2.072E-07
Analytical measures to sea water	1.780E-08	1.687E-08	9.283E-10
Adsorbable organic halogen compounds (AOX)	1.131E-15	1.071E-15	5.940E-17
Biological oxygen demand (BOD)	1.247E-09	1.181E-09	6.552E-11
Chemical oxygen demand (COD)	1.531E-08	1.451E-08	7.973E-10
Total organic bounded carbon	1.247E-09	1.181E-09	6.552E-11
Heavy metals to sea water	3.837E-09	3.637E-09	2.003E-10
Arsenic (+V)	4.269E-11	4.051E-11	2.177E-12
Cadmium (+II)	2.217E-11	2.105E-11	1.118E-12
Chromium (unspecified)	6.722E-11	6.380E-11	3.421E-12
Cobalt	4.474E-12	4.267E-12	2.074E-13
Copper (+II)	1.297E-10	1.230E-10	6.721E-12
Iron	2.191E-10	2.079E-10	1.126E-11
Lead (+II)	3.443E-11	3.264E-11	1.794E-12
Manganese (+II)	2.189E-11	2.076E-11	1.123E-12
Mercury (+II)	4.736E-13	4.490E-13	2.459E-14
Molybdenum	1.040E-10	1.001E-10	3.885E-12
Nickel (+II)	4.263E-11	4.043E-11	2.193E-12
Silver	3.786E-12	3.586E-12	2.009E-13
Strontium	3.053E-09	2.891E-09	1.620E-10
Tin (+IV)	4.535E-12	4.295E-12	2.406E-13
Titanium	4.620E-13	4.375E-13	2.451E-14
Vanadium (+III)	3.646E-12	3.473E-12	1.729E-13
Zinc (+II)	8.263E-11	7.885E-11	3.778E-12
Inorganic emissions to sea water	3.069E-06	2.915E-06	1.539E-07

Process or Category	Cradle to Gate	Cradle to Gate (RMA)	Gate to Gate (RMT)
Aluminum (+III)	1.487E-11	1.408E-11	7.890E-13
Ammonia	4.419E-10	4.185E-10	2.345E-11
Barium	5.879E-10	5.584E-10	2.943E-11
Beryllium	1.852E-13	1.770E-13	8.111E-15
Boron	2.405E-10	2.277E-10	1.276E-11
Calcium (+II)	2.626E-08	2.487E-08	1.393E-09
Carbonate	3.698E-08	3.513E-08	1.851E-09
Chloride	2.951E-06	2.803E-06	1.478E-07
Magnesium	6.557E-09	6.209E-09	3.477E-10
Nitrate	4.793E-11	4.553E-11	2.399E-12
Sodium (+I)	2.490E-08	2.359E-08	1.308E-09
Sulphate	1.561E-08	1.483E-08	7.815E-10
Sulphide	6.732E-09	6.395E-09	3.370E-10
Sulphur	1.287E-10	1.219E-10	6.827E-12
Organic emissions to sea water	1.852E-09	1.759E-09	9.290E-11
Hydrocarbons to sea water	1.841E-09	1.748E-09	9.237E-11
Acenaphthene	2.523E-13	2.404E-13	1.188E-14
Acenaphthylene	9.872E-14	9.406E-14	4.659E-15
Acetic acid	8.956E-14	8.550E-14	4.059E-15
Anthracene	1.513E-13	1.438E-13	7.493E-15
Aromatic hydrocarbons (unspecified)	1.247E-11	1.182E-11	6.552E-13
Benzene	2.070E-10	1.965E-10	1.052E-11
Benzo{a}anthracene	5.076E-14	4.839E-14	2.364E-15
Benzofluoranthene	5.034E-14	4.803E-14	2.316E-15
Chrysene	2.747E-13	2.620E-13	1.274E-14
Cresol (methyl phenol)	3.333E-12	3.156E-12	1.768E-13
Ethyl benzene	1.087E-11	1.033E-11	5.385E-13
Fluoranthene	5.904E-14	5.629E-14	2.749E-15
Hexane (isomers)	3.639E-13	3.446E-13	1.931E-14
Oil (unspecified)	1.228E-09	1.166E-09	6.159E-11
Phenol (hydroxy benzene)	1.956E-10	1.860E-10	9.615E-12
Toluene (methyl benzene)	1.367E-10	1.297E-10	6.984E-12
Xylene (isomers; dimethyl benzene)	4.538E-11	4.316E-11	2.221E-12
Naphthalene	1.087E-11	1.035E-11	5.235E-13
Particles to sea water	9.924E-07	9.403E-07	5.214E-08
Solids (suspended)	9.924E-07	9.403E-07	5.214E-08

Process or Category	Cradle to Gate	Cradle to Gate (RMA)	Gate to Gate (RMT)
Emissions to industrial soil	5.171E-05	4.979E-05	1.922E-06
Heavy metals to industrial soil	5.169E-05	4.977E-05	1.922E-06
Antimony	6.000E-20	5.777E-20	2.230E-21
Arsenic (+V)	2.865E-08	2.759E-08	1.065E-09
Cadmium (+II)	7.016E-14	6.707E-14	3.088E-15
Chromium (+III)	1.616E-14	1.532E-14	8.400E-16
Chromium (+VI)	2.174E-19	2.093E-19	8.081E-21
Chromium (unspecified)	1.136E-11	1.083E-11	5.342E-13
Cobalt	1.538E-13	1.461E-13	7.711E-15
Copper (+II)	1.045E-13	9.930E-14	5.205E-15
Iron	5.127E-05	4.937E-05	1.906E-06
Lead (+II)	2.049E-07	1.973E-07	7.615E-09
Manganese (+II)	5.744E-12	5.507E-12	2.370E-13
Mercury (+II)	5.300E-10	5.103E-10	1.970E-11
Nickel (+II)	1.589E-11	1.527E-11	6.223E-13
Selenium	3.404E-09	3.277E-09	1.265E-10
Strontium	3.201E-09	3.040E-09	1.604E-10
Thallium	2.477E-08	2.385E-08	9.209E-10
Vanadium (+III)	1.564E-07	1.506E-07	5.814E-09
Zinc (+II)	1.676E-12	1.601E-12	7.519E-14
Inorganic emissions to industrial soil	1.254E-08	1.196E-08	5.846E-10
Aluminum (+III)	1.589E-11	1.518E-11	7.120E-13
Ammonia	5.001E-09	4.751E-09	2.500E-10
Bromide	1.318E-12	1.252E-12	6.607E-14
Calcium (+II)	1.763E-09	1.697E-09	6.560E-11
Chloride	1.639E-09	1.558E-09	8.087E-11
Chlorine	5.073E-17	4.884E-17	1.885E-18
Fluoride	4.393E-11	4.173E-11	2.202E-12
Magnesium (+III)	2.436E-10	2.345E-10	9.066E-12
Phosphorus	5.216E-10	4.955E-10	2.612E-11
Potassium (+I)	1.560E-09	1.489E-09	7.157E-11
Sodium (+I)	1.542E-10	1.484E-10	5.738E-12
Sulphate	2.280E-10	2.177E-10	1.038E-11
Sulphide	1.368E-09	1.306E-09	6.228E-11
Organic emissions to industrial soil	2.179E-11	2.091E-11	8.837E-13
Oil (unspecified)	2.179E-11	2.091E-11	8.837E-13

Process or Category	Cradle to Gate	Cradle to Gate (RMA)	Gate to Gate (RMT)
Radioactive emissions to industrial soil	0.000E+00	0.000E+00	0.000E+00
Uranium	0.000E+00	0.000E+00	0.000E+00
Calcium Fluoride	3.913E-09	3.768E-09	1.454E-10
Radionuclide	0.000E+00	0.000E+00	0.000E+00

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Point of Contact: Timothy Skone (NETL), Timothy.Skone@NETL.DOE.GOV

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