NETL Life Cycle Inventory Data
Process Documentation File

Process Name:	Uranium, Extraction and Transport with European Enrichment
Reference Flow:	1 kg of Uranium Fuel Assemblies
Brief Description:	This process includes all inputs for the raw material acquisition and raw material transportation for 1 kg of delivered uranium fuel assemblies assuming uranium enrichment in Europe using gas centrifuge enrichment technology.

Section I: Meta Data

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

Year Data Best Represents: 2008

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:

Africa	*The proportion of African mined uranium used in American reactors*
Australia	*The proportion of Australian mined uranium used in American reactors*
Canada	*The proportion of Canadian mined uranium used in American reactors*
Russia	*The proportion of Russian mined uranium used in American reactors*

US	*The proportion of American mined uranium used in American reactors*

Transportation Distances By Truck, Train, and Ocean Freighter for each of the following:

Mine to Conversion Facility	*The distances to transport from the mine to the conversion facility by each mode of transportation*
Conversion Facility to Enrichment Facility	*The distances to transport from the conversion facility to the enrichment facility by each mode of transportation*
Enrichment Facility to Fuel Assembly	*The distances to transport from the enrichment facility to the fuel assembly facility by each mode of transportation*

Tracked Input Flows:

Yellowcake (U_3O_8)	*The quantity of yellowcake that is produced at the mines which goes to the conversion facility*
Uranium Hexafluoride (UF_6)	*The output from the conversion facility that enters the enrichment facility*
Enriched Uranium Hexafluoride (UF_6)	*The output from the enrichment facility that enters the fuel assembly facility*

Tracked Output Flows:

Fuel Assembly	*Assembled enriched uranium for insertion into the nuclear reactor*

Section II: Process Description

Associated Documentation

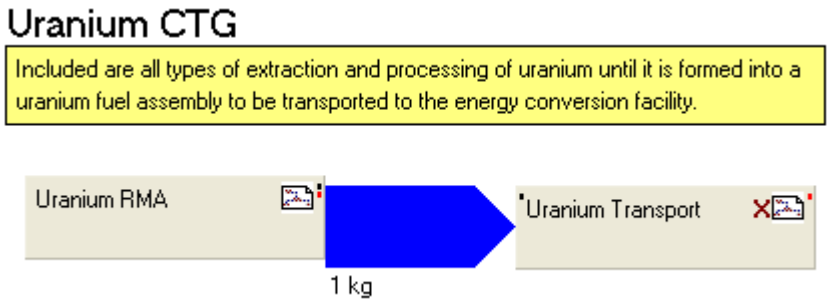
This unit process is composed of this document and the data sheet (DS) *DS_CTG_Uranium_EU_Enrich_2011.02.xls*, which provides additional details regarding relevant calculations, data quality, and references.

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 uranium fuel assembly 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 Uranium



Boundary and Description

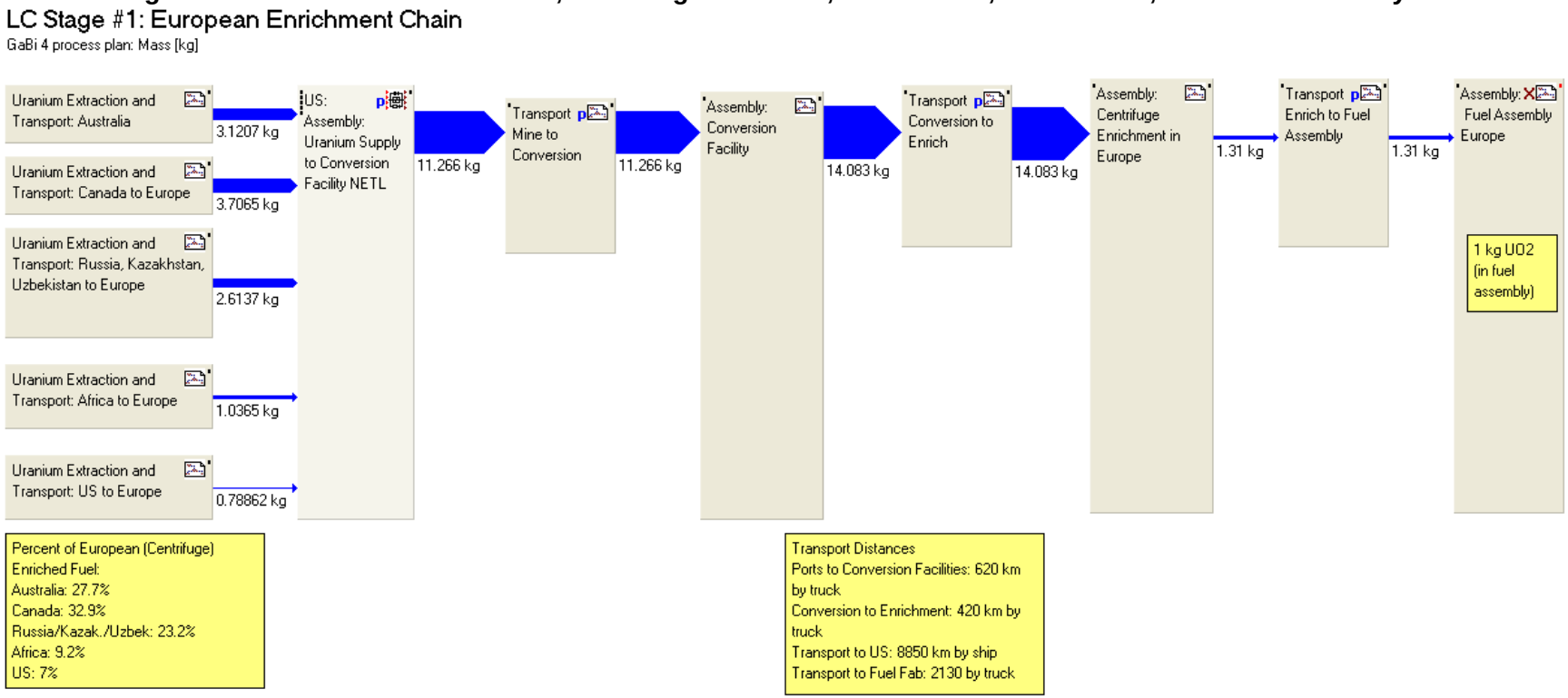
LC Stage #1, RMA of uranium, includes extraction (open pit, in situ, and underground mining) and processing of yellowcake, conversion of yellowcake to uranium hexafluoride, enrichment of the concentration uranium hexafluoride, and the assembly of the enriched uranium hexafluoride into fuel assemblies. The enrichment occurs in Europe, using centrifugal enrichment technology exclusively.

Each of the steps of the RMA processing includes the construction and operations of the step. The transportation between the steps is considered part of RMA but will be discussed in detail during the RMT section of this document as transportation options were the same regardless where in the life cycle it occurred. With the machinery and facility construction, upstream processes (for example, steel or concrete) are included. The plan with European enrichment is provided in **Figure 2**.

The construction processes for both machinery and facilities were created. The machinery includes:

- Underground Uranium Mine
  (DS/DF_Stage1_C_Underground_Uranium_Mine_2010.01.doc)
- Open Pit Uranium Mine, Construction
  (DS/DF_DF_Stage1_C_Open_Pit_Uranium_Mine_2010.01.doc)
- Uranium Milling, Construction
  (DS/DF_DS_Stage1_C_Milling_Facility_2010.01.xls)
- In Situ Uranium Mine, Construction
  (DS/ DF_DF_Stage1_C_In_Situ_Uranium_Extraction_2010 01.doc)

Figure 2: Plan for RMA of Uranium, Including Extraction, Conversion, Enrichment, and Fuel Assembly



- Uranium Conversion Facility, Construction
  (DS/DF_Stage1_C_Conversion_Facility_UF6_2010.01.doc)
- US Enrichment Facility, Construction
  (DS/DF_Stage1_C_Nuclear_Enrichment_Facility_2010 01.doc)
- Enrichment, Decommissioning
  (DS/DF_Stage1_C_GasDiffusion_Decommissioning_2010.01.doc)
- Fuel Assembly, Construction
  (DS/DF_Stage1_C_Fuel_Fabrication_Facility_2010.01.doc)

Each piece of equipment or facility is scaled to the production of one kilogram of fuel assembly. 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 Uranium

Uranium - EU Pathway
LC Stage #1: European Enrichment Chain
Assembly: Centrifuge Enrichment in Europe
Centrifuge Enrichment in Europe, Operation
DE: Chlorine mix PE
EU-15: Diesel ELCD/PE-GaBi
EU-15: Lubricants PE
FR: Natural gas mix PE
FR: Power grid mix ELCD/PE-GaBi
US: Gas Centrifuge Uranium Enrichment, Operation NETL
US: Industrial Boiler, Natural Gas Fired, Over 100 Million BTU/hr NETL
Enrichment Facility, Construction
DE: Copper mix PE
EU-15: Bitumen at refinery PE
EU-15: Diesel ELCD/PE-GaBi
FR: Power grid mix ELCD/PE-GaBi
RER: Aluminum ingot mix PE
RER: Aluminum sheet PE <p-agg>
US: Concrete, ready mixed, R-5-0 (100% Portland Cement) NETL <u-so>
US: Enrichment Facility, Construction NETL
WOR: Steel Pipe, Welded, BF, Manufacture NETL <u-so>
WOR: Steel Plate, BF, Manufacture NETL <u-so>
DE: Diesel PE
Enrichment, Decommissioning
FR: Power grid mix ELCD/PE-GaBi
US: Assembly: Enrichment Facility Centrifuge
US: UF6 Storage Container, Construction NETL
WOR: Steel Plate, BF, Manufacture NETL <u-so>

- Assembly: Conversion Facility
  - Conversion, Construction
    - DE: Cast iron part PE <p-agg>
    - DE: Copper mix PE
    - DE: Steel cold rolled PE
    - North American Average Electricity Mix, 2007 070111 NETL
    - RER: Aluminum ingot mix PE
    - RER: Aluminum sheet PE <p-agg>
    - US: Concrete, ready mixed, R-5-0 (100% Portland Cement) NETL <u-so>
    - US: Thermal energy from heavy fuel oil PE
    - US: Uranium Conversion Facility, Construction NETL
  - Conversion, Operation
    - CA: Uranium Conversion Facility, Operation NETL
    - North American Average Electricity Mix, 2007 070111 NETL
    - US: Industrial Boiler, Natural Gas Fired, Over 100 Million BTU/hr NETL
    - US: Natural Gas RMA/RMT, Mix Nominal, 060911 NETL
  - US: Assembly: Conversion Facility NETL
- Assembly: Fuel Assembly Europe
  - Fuel Assembly, Construction
    - DE: Cast iron part PE <p-agg>
    - DE: Copper mix PE
    - DE: Steel cold rolled PE
    - North American Average Electricity Mix, 2007 070111 NETL
    - RER: Aluminum ingot mix PE
    - RER: Aluminum sheet PE <p-agg>
    - US: Concrete, ready mixed, R-5-0 (100% Portland Cement) NETL <u-so>
    - US: Fuel Assembly, Construction NETL
    - US: Thermal energy from heavy fuel oil PE
  - Fuel Assembly, Operation
    - North American Average Electricity Mix, 2007 070111 NETL
    - US: Fuel Assembly, Operation NETL
    - US: Natural Gas RMA/RMT, Mix Nominal, 060911 NETL
  - US: Assembly: Fuel Assembly Europe NETL
- Transport Conversion to Enrich
  - US: DIESEL, NATIONAL AVERAGE, 2009 NETL <u-so>
  - US: Ocean Freighter Transport, Operation NETL
  - US: Tractor-trailer Transport, Operation NETL
  - US: Train Transport, Operation NETL
- Transport Enrich to Fuel Assembly
  - US: DIESEL, NATIONAL AVERAGE, 2009 NETL <u-so>
  - US: Ocean Freighter Transport, Operation NETL
  - US: Tractor-trailer Transport, Operation NETL
  - US: Train Transport, Operation NETL

- Transport Mine to Conversion
  - US: DIESEL, NATIONAL AVERAGE, 2009 NETL <u-so>
  - US: Ocean Freighter Transport, Operation NETL
  - US: Tractor-trailer Transport, Operation NETL
  - US: Train Transport, Operation NETL
- Uranium Extraction and Transport: Africa to Europe
  - Transport Africa to Europe
    - US: DIESEL, NATIONAL AVERAGE, 2009 NETL <u-so>
    - US: Ocean Freighter Transport, Operation NETL
    - US: Tractor-trailer Transport, Operation NETL
    - US: Train Transport, Operation NETL
  - Uranium Mining Mixer: Africa
    - ASSEMBLY: In Situ Uranium Mine
      - In Situ Mine, Construction
        - North American Average Electricity Mix, 2007 070111 NETL
        - North American Average Electricity Mix, 2007 070111 NETL
        - RER: Polyvinylchloride pipe (PVC) PlasticsEurope
        - US: Concrete, ready mixed, R-5-0 (100% Portland Cement) NETL <u-so>
        - US: DIESEL, NATIONAL AVERAGE, 2009 NETL <u-so>
        - US: In Situ Uranium Mine, Construction NETL
      - In Situ Mining, Operation
        - DE: Carbon dioxide PE
        - DE: Soda (Na2CO3) PE
        - DE: Sodium chloride (rock salt) PE
        - FR: Hydrogen peroxide PE
        - GB: Chlorine mix PE
        - GB: Oxygen PE
        - North American Average Electricity Mix, 2007 070111 NETL
        - US: In Situ Leach Mining Operation NETL
        - US: Natural Gas RMA/RMT, Mix Nominal, 060911 NETL
      - US: Assembly: In Situ Uranium Mine
    - ASSEMBLY: Open Pit Uranium Mine
      - Uranium Milling, Construction
        - DE: Copper mix PE
        - DE: Pine log with bark ELCD/PE-GaBi
        - DE: Steel cold rolled PE
        - North American Average Electricity Mix, 2007 070111 NETL
        - RER: Aluminum ingot mix PE
        - RER: Aluminum sheet PE <p-agg>
        - RER: Polyvinylchloride pipe (PVC) PlasticsEurope
        - US: Concrete, ready mixed, R-5-0 (100% Portland Cement) NETL <u-so>
        - US: Diesel Fired Construction Equipment, Variable Horsepower NETL
        - US: DIESEL, NATIONAL AVERAGE, 2009 NETL <u-so>

US: Uranium Milling, Construction NETL
Uranium Open Pit Mine, Construction
DE: Cast iron part PE <p-agg>
DE: Copper mix PE
DE: Steel cold rolled PE
DE: Styrene-butadiene rubber mix (SBR) PE
North American Average Electricity Mix, 2007 070111 NETL
RER: Aluminum ingot mix PE
RER: Aluminum sheet PE <p-agg>
RER: Polyvinylchloride pipe (PVC) PlasticsEurope
US: Concrete, ready mixed, R-5-0 (100% Portland Cement) NETL <u-so>
US: Thermal energy from heavy fuel oil PE
US: Uranium Open Pit Mine, Construction NETL
WOR: Rebar Wire Rod, BF Manufactures NETL
Uranium Open Pit Mining, Operation
DE: Fuel oil light at refinery PE
DE: Limestone hydrate (Ca(OH)2) PE
DE: Soda (Na2CO3) PE
DE: Sulphuric acid (96%) PE
GB: Ammonia (NH3) PE
North American Average Electricity Mix, 2007 070111 NETL
RER: Ammonium nitrate PE
US: Diesel Fired Construction Equipment, Variable Horsepower NETL
US: DIESEL, NATIONAL AVERAGE, 2009 NETL <u-so>
US: Industrial Boiler, Natural Gas Fired, Over 100 Million BTU/hr NETL
US: Natural Gas RMA/RMT, Mix Nominal, 060911 NETL
US: Uranium Open Pit Mining and Milling Operations NETL
US: Assembly: Open Pit Uranium Mine
US: DIESEL, NATIONAL AVERAGE, 2009 NETL <u-so>
US: Surface Mine Commissioning / Decommissioning NETL
STAGE #1: I6 RMA
Coal Mine Commissioning/Decommissioning
US: Commissioning and Decommissioning of Illinois No. 6 Coal Mine NETL <u-so>
US: DIESEL, NATIONAL AVERAGE, 2009 NETL <u-so>
US: GASOLINE, NATIONAL AVERAGE, 2009 NETL <u-so>
COAL MINE CONSTRUCTION
GAB II, ASPHALT (Medium water content)
DK: GAB II, ASPHALT (Medium water content)
DK: Gravel round: at mine/CH S NETL
EU-15: Bitumen at refinery PE
North American Average Electricity Mix, 2007 070111 NETL
US: DIESEL, NATIONAL AVERAGE, 2009 NETL <u-so>

US: Natural Gas RMA/RMT, Mix Nominal, 060911 NETL
BF: Hot-dip Galvanized NETL
DE: Cast iron part PE <p-agg>
DE: Copper mix PE
DE: Stainless steel cold roll PE
DE: Steel cold rolled PE
DE: Styrene-butadiene rubber mix (SBR) PE
North American Average Electricity Mix, 2007 070111 NETL
RER: Polyvinylchloride pipe (PVC) PlasticsEurope
US: COAL MINE, CONSTRUCTION NETL
US: Concrete, ready mixed, R-5-0 (100% Portland Cement) NETL <u-so>
US: Thermal energy from heavy fuel oil PE
WOR: Rebar Wire Rod, BF Manufactures NETL
WOR: Steel Plate, BF, Manufacture NETL <u-so>
WOR: Steel, Stainless, 316 2B, 80% Recycled NETL <u-so>
Coal Mine, Operation
North American Average Electricity Mix, 2007 070111 NETL
US: DIESEL, NATIONAL AVERAGE, 2009 NETL <u-so>
US: Underground Mine, Illinois No. 6 Bituminous Coal, Operation <u-so>
US: ASSEMBLY: COAL MINE CONSTRUCTION & OPERATION NETL
US: Uranium Mining Mixer: Africa NETL
Uranium Extraction and Transport: Australia
Transport Australia Mine to Port
US: DIESEL, NATIONAL AVERAGE, 2009 NETL <u-so>
US: Ocean Freighter Transport, Operation NETL
US: Tractor-trailer Transport, Operation NETL
US: Train Transport, Operation NETL
Uranium Mining Mixer: Australia
ASSEMBLY: In Situ Uranium Mine
In Situ Mine, Construction
North American Average Electricity Mix, 2007 070111 NETL
North American Average Electricity Mix, 2007 070111 NETL
RER: Polyvinylchloride pipe (PVC) PlasticsEurope
US: Concrete, ready mixed, R-5-0 (100% Portland Cement) NETL <u-so>
US: DIESEL, NATIONAL AVERAGE, 2009 NETL <u-so>
US: In Situ Uranium Mine, Construction NETL
In Situ Mining, Operation
DE: Carbon dioxide PE
DE: Soda (Na2CO3) PE
DE: Sodium chloride (rock salt) PE
FR: Hydrogen peroxide PE
GB: Chlorine mix PE
GB: Oxygen PE

North American Average Electricity Mix, 2007 070111 NETL
US: In Situ Leach Mining Operation NETL
US: Natural Gas RMA/RMT, Mix Nominal, 060911 NETL
US: Assembly: In Situ Uranium Mine
ASSEMBLY: Open Pit Uranium Mine
Uranium Milling, Construction
DE: Copper mix PE
DE: Pine log with bark ELCD/PE-GaBi
DE: Steel cold rolled PE
North American Average Electricity Mix, 2007 070111 NETL
RER: Aluminum ingot mix PE
RER: Aluminum sheet PE <p-agg>
RER: Polyvinylchloride pipe (PVC) PlasticsEurope
US: Concrete, ready mixed, R-5-0 (100% Portland Cement) NETL <u-so>
US: Diesel Fired Construction Equipment, Variable Horsepower NETL
US: DIESEL, NATIONAL AVERAGE, 2009 NETL <u-so>
US: Uranium Milling, Construction NETL
Uranium Open Pit Mine, Construction
DE: Cast iron part PE <p-agg>
DE: Copper mix PE
DE: Steel cold rolled PE
DE: Styrene-butadiene rubber mix (SBR) PE
North American Average Electricity Mix, 2007 070111 NETL
RER: Aluminum ingot mix PE
RER: Aluminum sheet PE <p-agg>
RER: Polyvinylchloride pipe (PVC) PlasticsEurope
US: Concrete, ready mixed, R-5-0 (100% Portland Cement) NETL <u-so>
US: Thermal energy from heavy fuel oil PE
US: Uranium Open Pit Mine, Construction NETL
WOR: Rebar Wire Rod, BF Manufactures NETL
Uranium Open Pit Mining, Operation
DE: Fuel oil light at refinery PE
DE: Limestone hydrate (Ca(OH)2) PE
DE: Soda (Na2CO3) PE
DE: Sulphuric acid (96%) PE
GB: Ammonia (NH3) PE
North American Average Electricity Mix, 2007 070111 NETL
RER: Ammonium nitrate PE
US: Diesel Fired Construction Equipment, Variable Horsepower NETL
US: DIESEL, NATIONAL AVERAGE, 2009 NETL <u-so>
US: Industrial Boiler, Natural Gas Fired, Over 100 Million BTU/hr NETL
US: Natural Gas RMA/RMT, Mix Nominal, 060911 NETL
US: Uranium Open Pit Mining and Milling Operations NETL

US: Assembly: Open Pit Uranium Mine
US: DIESEL, NATIONAL AVERAGE, 2009 NETL <u-so>
US: Surface Mine Commissioning / Decommissioning NETL
STAGE #1: I6 RMA
Coal Mine Commissioning/Decommissioning
US: Commissioning and Decommissioning of Illinois No. 6 Coal Mine NETL <u-so>
US: DIESEL, NATIONAL AVERAGE, 2009 NETL <u-so>
US: GASOLINE, NATIONAL AVERAGE, 2009 NETL <u-so>
COAL MINE CONSTRUCTION
GAB II, ASPHALT (Medium water content)
DK: GAB II, ASPHALT (Medium water content)
DK: Gravel round: at mine/CH S NETL
EU-15: Bitumen at refinery PE
North American Average Electricity Mix, 2007 070111 NETL
US: DIESEL, NATIONAL AVERAGE, 2009 NETL <u-so>
US: Natural Gas RMA/RMT, Mix Nominal, 060911 NETL
BF: Hot-dip Galvanized NETL
DE: Cast iron part PE <p-agg>
DE: Copper mix PE
DE: Stainless steel cold roll PE
DE: Steel cold rolled PE
DE: Styrene-butadiene rubber mix (SBR) PE
North American Average Electricity Mix, 2007 070111 NETL
RER: Polyvinylchloride pipe (PVC) PlasticsEurope
US: COAL MINE, CONSTRUCTION NETL
US: Concrete, ready mixed, R-5-0 (100% Portland Cement) NETL <u-so>
US: Thermal energy from heavy fuel oil PE
WOR: Rebar Wire Rod, BF Manufactures NETL
WOR: Steel Plate, BF, Manufacture NETL <u-so>
WOR: Steel, Stainless, 316 2B, 80% Recycled NETL <u-so>
Coal Mine, Operation
North American Average Electricity Mix, 2007 070111 NETL
US: DIESEL, NATIONAL AVERAGE, 2009 NETL <u-so>
US: Underground Mine, Illinois No. 6 Bituminous Coal, Operation <u-so>
US: ASSEMBLY: COAL MINE CONSTRUCTION & OPERATION NETL
US: Uranium Mining Mixer: Australia NETL
Uranium Extraction and Transport: Canada to Europe
Transport Canada to Europe
US: DIESEL, NATIONAL AVERAGE, 2009 NETL <u-so>
US: Ocean Freighter Transport, Operation NETL
US: Tractor-trailer Transport, Operation NETL
US: Train Transport, Operation NETL

- Uranium Mining Mixer: Canada
  - ASSEMBLY: In Situ Uranium Mine
    - In Situ Mine, Construction
      - North American Average Electricity Mix, 2007 070111 NETL
      - North American Average Electricity Mix, 2007 070111 NETL
      - RER: Polyvinylchloride pipe (PVC) PlasticsEurope
      - US: Concrete, ready mixed, R-5-0 (100% Portland Cement) NETL <u-so>
      - US: DIESEL, NATIONAL AVERAGE, 2009 NETL <u-so>
      - US: In Situ Uranium Mine, Construction NETL
    - In Situ Mining, Operation
      - DE: Carbon dioxide PE
      - DE: Soda (Na2CO3) PE
      - DE: Sodium chloride (rock salt) PE
      - FR: Hydrogen peroxide PE
      - GB: Chlorine mix PE
      - GB: Oxygen PE
      - North American Average Electricity Mix, 2007 070111 NETL
      - US: In Situ Leach Mining Operation NETL
      - US: Natural Gas RMA/RMT, Mix Nominal, 060911 NETL
    - US: Assembly: In Situ Uranium Mine
  - ASSEMBLY: Open Pit Uranium Mine
    - Uranium Milling, Construction
      - DE: Copper mix PE
      - DE: Pine log with bark ELCD/PE-GaBi
      - DE: Steel cold rolled PE
      - North American Average Electricity Mix, 2007 070111 NETL
      - RER: Aluminum ingot mix PE
      - RER: Aluminum sheet PE <p-agg>
      - RER: Polyvinylchloride pipe (PVC) PlasticsEurope
      - US: Concrete, ready mixed, R-5-0 (100% Portland Cement) NETL <u-so>
      - US: Diesel Fired Construction Equipment, Variable Horsepower NETL
      - US: DIESEL, NATIONAL AVERAGE, 2009 NETL <u-so>
      - US: Uranium Milling, Construction NETL
    - Uranium Open Pit Mine, Construction
      - DE: Cast iron part PE <p-agg>
      - DE: Copper mix PE
      - DE: Steel cold rolled PE
      - DE: Styrene-butadiene rubber mix (SBR) PE
      - North American Average Electricity Mix, 2007 070111 NETL
      - RER: Aluminum ingot mix PE
      - RER: Aluminum sheet PE <p-agg>
      - RER: Polyvinylchloride pipe (PVC) PlasticsEurope
      - US: Concrete, ready mixed, R-5-0 (100% Portland Cement) NETL <u-so>

US: Thermal energy from heavy fuel oil PE
US: Uranium Open Pit Mine, Construction NETL
WOR: Rebar Wire Rod, BF Manufactures NETL
Uranium Open Pit Mining, Operation
DE: Fuel oil light at refinery PE
DE: Limestone hydrate (Ca(OH)2) PE
DE: Soda (Na2CO3) PE
DE: Sulphuric acid (96%) PE
GB: Ammonia (NH3) PE
North American Average Electricity Mix, 2007 070111 NETL
RER: Ammonium nitrate PE
US: Diesel Fired Construction Equipment, Variable Horsepower NETL
US: DIESEL, NATIONAL AVERAGE, 2009 NETL <u-so>
US: Industrial Boiler, Natural Gas Fired, Over 100 Million BTU/hr NETL
US: Natural Gas RMA/RMT, Mix Nominal, 060911 NETL
US: Uranium Open Pit Mining and Milling Operations NETL
US: Assembly: Open Pit Uranium Mine
US: DIESEL, NATIONAL AVERAGE, 2009 NETL <u-so>
US: Surface Mine Commissioning / Decommissioning NETL
STAGE #1: I6 RMA
Coal Mine Commissioning/Decommissioning
US: Commissioning and Decommissioning of Illinois No. 6 Coal Mine NETL <u-so>
US: DIESEL, NATIONAL AVERAGE, 2009 NETL <u-so>
US: GASOLINE, NATIONAL AVERAGE, 2009 NETL <u-so>
COAL MINE CONSTRUCTION
GAB II, ASPHALT (Medium water content)
DK: GAB II, ASPHALT (Medium water content)
DK: Gravel round: at mine/CH S NETL
EU-15: Bitumen at refinery PE
North American Average Electricity Mix, 2007 070111 NETL
US: DIESEL, NATIONAL AVERAGE, 2009 NETL <u-so>
US: Natural Gas RMA/RMT, Mix Nominal, 060911 NETL
BF: Hot-dip Galvanized NETL
DE: Cast iron part PE <p-agg>
DE: Copper mix PE
DE: Stainless steel cold roll PE
DE: Steel cold rolled PE
DE: Styrene-butadiene rubber mix (SBR) PE
North American Average Electricity Mix, 2007 070111 NETL
RER: Polyvinylchloride pipe (PVC) PlasticsEurope
US: COAL MINE, CONSTRUCTION NETL
US: Concrete, ready mixed, R-5-0 (100% Portland Cement) NETL <u-so>

- US: Thermal energy from heavy fuel oil PE
- WOR: Rebar Wire Rod, BF Manufactures NETL
- WOR: Steel Plate, BF, Manufacture NETL <u-so>
- WOR: Steel, Stainless, 316 2B, 80% Recycled NETL <u-so>

Coal Mine, Operation

- North American Average Electricity Mix, 2007 070111 NETL
- US: DIESEL, NATIONAL AVERAGE, 2009 NETL <u-so>
- US: Underground Mine, Illinois No. 6 Bituminous Coal, Operation <u-so>

US: ASSEMBLY: COAL MINE CONSTRUCTION & OPERATION NETL

US: Uranium Mining Mixer: Canada NETL

Uranium Extraction and Transport: Russia, Kazakhstan, Uzbekistan to Europe

Transport Russia to Europe

- US: DIESEL, NATIONAL AVERAGE, 2009 NETL <u-so>
- US: Ocean Freighter Transport, Operation NETL
- US: Tractor-trailer Transport, Operation NETL
- US: Train Transport, Operation NETL

Uranium Mining Mixer: Russia

ASSEMBLY: In Situ Uranium Mine

In Situ Mine, Construction

- North American Average Electricity Mix, 2007 070111 NETL
- North American Average Electricity Mix, 2007 070111 NETL
- RER: Polyvinylchloride pipe (PVC) PlasticsEurope
- US: Concrete, ready mixed, R-5-0 (100% Portland Cement) NETL <u-so>
- US: DIESEL, NATIONAL AVERAGE, 2009 NETL <u-so>
- US: In Situ Uranium Mine, Construction NETL

In Situ Mining, Operation

- DE: Carbon dioxide PE
- DE: Soda (Na2CO3) PE
- DE: Sodium chloride (rock salt) PE
- FR: Hydrogen peroxide PE
- GB: Chlorine mix PE
- GB: Oxygen PE
- North American Average Electricity Mix, 2007 070111 NETL
- US: In Situ Leach Mining Operation NETL
- US: Natural Gas RMA/RMT, Mix Nominal, 060911 NETL

US: Assembly: In Situ Uranium Mine

ASSEMBLY: Open Pit Uranium Mine

Uranium Milling, Construction

- DE: Copper mix PE
- DE: Pine log with bark ELCD/PE-GaBi
- DE: Steel cold rolled PE
- North American Average Electricity Mix, 2007 070111 NETL
- RER: Aluminum ingot mix PE

RER: Aluminum sheet PE <p-agg>
RER: Polyvinylchloride pipe (PVC) PlasticsEurope
US: Concrete, ready mixed, R-5-0 (100% Portland Cement) NETL <u-so>
US: Diesel Fired Construction Equipment, Variable Horsepower NETL
US: DIESEL, NATIONAL AVERAGE, 2009 NETL <u-so>
US: Uranium Milling, Construction NETL
Uranium Open Pit Mine, Construction
DE: Cast iron part PE <p-agg>
DE: Copper mix PE
DE: Steel cold rolled PE
DE: Styrene-butadiene rubber mix (SBR) PE
North American Average Electricity Mix, 2007 070111 NETL
RER: Aluminum ingot mix PE
RER: Aluminum sheet PE <p-agg>
RER: Polyvinylchloride pipe (PVC) PlasticsEurope
US: Concrete, ready mixed, R-5-0 (100% Portland Cement) NETL <u-so>
US: Thermal energy from heavy fuel oil PE
US: Uranium Open Pit Mine, Construction NETL
WOR: Rebar Wire Rod, BF Manufactures NETL
Uranium Open Pit Mining, Operation
DE: Fuel oil light at refinery PE
DE: Limestone hydrate (Ca(OH)2) PE
DE: Soda (Na2CO3) PE
DE: Sulphuric acid (96%) PE
GB: Ammonia (NH3) PE
North American Average Electricity Mix, 2007 070111 NETL
RER: Ammonium nitrate PE
US: Diesel Fired Construction Equipment, Variable Horsepower NETL
US: DIESEL, NATIONAL AVERAGE, 2009 NETL <u-so>
US: Industrial Boiler, Natural Gas Fired, Over 100 Million BTU/hr NETL
US: Natural Gas RMA/RMT, Mix Nominal, 060911 NETL
US: Uranium Open Pit Mining and Milling Operations NETL
US: Assembly: Open Pit Uranium Mine
US: DIESEL, NATIONAL AVERAGE, 2009 NETL <u-so>
US: Surface Mine Commissioning / Decommissioning NETL
STAGE #1: I6 RMA
Coal Mine Commissioning/Decommissioning
US: Commissioning and Decommissioning of Illinois No. 6 Coal Mine NETL <u-so>
US: DIESEL, NATIONAL AVERAGE, 2009 NETL <u-so>
US: GASOLINE, NATIONAL AVERAGE, 2009 NETL <u-so>
COAL MINE CONSTRUCTION
GAB II, ASPHALT (Medium water content)

- DK: GAB II, ASPHALT (Medium water content)
- DK: Gravel round: at mine/CH S NETL
- EU-15: Bitumen at refinery PE
- North American Average Electricity Mix, 2007 070111 NETL
- US: DIESEL, NATIONAL AVERAGE, 2009 NETL <u-so>
- US: Natural Gas RMA/RMT, Mix Nominal, 060911 NETL
- BF: Hot-dip Galvanized NETL
- DE: Cast iron part PE <p-agg>
- DE: Copper mix PE
- DE: Stainless steel cold roll PE
- DE: Steel cold rolled PE
- DE: Styrene-butadiene rubber mix (SBR) PE
- North American Average Electricity Mix, 2007 070111 NETL
- RER: Polyvinylchloride pipe (PVC) PlasticsEurope
- US: COAL MINE, CONSTRUCTION NETL
- US: Concrete, ready mixed, R-5-0 (100% Portland Cement) NETL <u-so>
- US: Thermal energy from heavy fuel oil PE
- WOR: Rebar Wire Rod, BF Manufactures NETL
- WOR: Steel Plate, BF, Manufacture NETL <u-so>
- WOR: Steel, Stainless, 316 2B, 80% Recycled NETL <u-so>
- Coal Mine, Operation
- North American Average Electricity Mix, 2007 070111 NETL
- US: DIESEL, NATIONAL AVERAGE, 2009 NETL <u-so>
- US: Underground Mine, Illinois No. 6 Bituminous Coal, Operation <u-so>
- US: ASSEMBLY: COAL MINE CONSTRUCTION & OPERATION NETL
- US: Uranium Mining Mixer: Russia NETL

Uranium Extraction and Transport: US to Europe

- Transport US to Europe
- US: DIESEL, NATIONAL AVERAGE, 2009 NETL <u-so>
- US: Ocean Freighter Transport, Operation NETL
- US: Tractor-trailer Transport, Operation NETL
- US: Train Transport, Operation NETL
- Uranium Mining Mixer:US
- ASSEMBLY: In Situ Uranium Mine
- In Situ Mine, Construction
- North American Average Electricity Mix, 2007 070111 NETL
- North American Average Electricity Mix, 2007 070111 NETL
- RER: Polyvinylchloride pipe (PVC) PlasticsEurope
- US: Concrete, ready mixed, R-5-0 (100% Portland Cement) NETL <u-so>
- US: DIESEL, NATIONAL AVERAGE, 2009 NETL <u-so>
- US: In Situ Uranium Mine, Construction NETL
- In Situ Mining, Operation
- DE: Carbon dioxide PE

DE: Soda (Na2CO3) PE
DE: Sodium chloride (rock salt) PE
FR: Hydrogen peroxide PE
GB: Chlorine mix PE
GB: Oxygen PE
North American Average Electricity Mix, 2007 070111 NETL
US: In Situ Leach Mining Operation NETL
US: Natural Gas RMA/RMT, Mix Nominal, 060911 NETL
US: Assembly: In Situ Uranium Mine
ASSEMBLY: Open Pit Uranium Mine
Uranium Milling, Construction
DE: Copper mix PE
DE: Pine log with bark ELCD/PE-GaBi
DE: Steel cold rolled PE
North American Average Electricity Mix, 2007 070111 NETL
RER: Aluminum ingot mix PE
RER: Aluminum sheet PE <p-agg>
RER: Polyvinylchloride pipe (PVC) PlasticsEurope
US: Concrete, ready mixed, R-5-0 (100% Portland Cement) NETL <u-so>
US: Diesel Fired Construction Equipment, Variable Horsepower NETL
US: DIESEL, NATIONAL AVERAGE, 2009 NETL <u-so>
US: Uranium Milling, Construction NETL
Uranium Open Pit Mine, Construction
DE: Cast iron part PE <p-agg>
DE: Copper mix PE
DE: Steel cold rolled PE
DE: Styrene-butadiene rubber mix (SBR) PE
North American Average Electricity Mix, 2007 070111 NETL
RER: Aluminum ingot mix PE
RER: Aluminum sheet PE <p-agg>
RER: Polyvinylchloride pipe (PVC) PlasticsEurope
US: Concrete, ready mixed, R-5-0 (100% Portland Cement) NETL <u-so>
US: Thermal energy from heavy fuel oil PE
US: Uranium Open Pit Mine, Construction NETL
WOR: Rebar Wire Rod, BF Manufactures NETL
Uranium Open Pit Mining, Operation
DE: Fuel oil light at refinery PE
DE: Limestone hydrate (Ca(OH)2) PE
DE: Soda (Na2CO3) PE
DE: Sulphuric acid (96%) PE
GB: Ammonia (NH3) PE
North American Average Electricity Mix, 2007 070111 NETL
RER: Ammonium nitrate PE

- US: Diesel Fired Construction Equipment, Variable Horsepower NETL
- US: DIESEL, NATIONAL AVERAGE, 2009 NETL <u-so>
- US: Industrial Boiler, Natural Gas Fired, Over 100 Million BTU/hr NETL
- US: Natural Gas RMA/RMT, Mix Nominal, 060911 NETL
- US: Uranium Open Pit Mining and Milling Operations NETL

US: Assembly: Open Pit Uranium Mine

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

US: Surface Mine Commissioning / Decommissioning NETL

STAGE #1: I6 RMA

Coal Mine Commissioning/Decommissioning

US: Commissioning and Decommissioning of Illinois No. 6 Coal Mine NETL <u-so>

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

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

COAL MINE CONSTRUCTION

GAB II, ASPHALT (Medium water content)

- DK: GAB II, ASPHALT (Medium water content)
- DK: Gravel round: at mine/CH S NETL
- EU-15: Bitumen at refinery PE
- North American Average Electricity Mix, 2007 070111 NETL
- US: DIESEL, NATIONAL AVERAGE, 2009 NETL <u-so>
- US: Natural Gas RMA/RMT, Mix Nominal, 060911 NETL

- BF: Hot-dip Galvanized NETL
- DE: Cast iron part PE <p-agg>
- DE: Copper mix PE
- DE: Stainless steel cold roll PE
- DE: Steel cold rolled PE
- DE: Styrene-butadiene rubber mix (SBR) PE
- North American Average Electricity Mix, 2007 070111 NETL
- RER: Polyvinylchloride pipe (PVC) PlasticsEurope
- US: COAL MINE, CONSTRUCTION NETL
- US: Concrete, ready mixed, R-5-0 (100% Portland Cement) NETL <u-so>
- US: Thermal energy from heavy fuel oil PE
- WOR: Rebar Wire Rod, BF Manufactures NETL
- WOR: Steel Plate, BF, Manufacture NETL <u-so>
- WOR: Steel, Stainless, 316 2B, 80% Recycled NETL <u-so>

Coal Mine, Operation

- North American Average Electricity Mix, 2007 070111 NETL
- US: DIESEL, NATIONAL AVERAGE, 2009 NETL <u-so>
- US: Underground Mine, Illinois No. 6 Bituminous Coal, Operation <u-so>

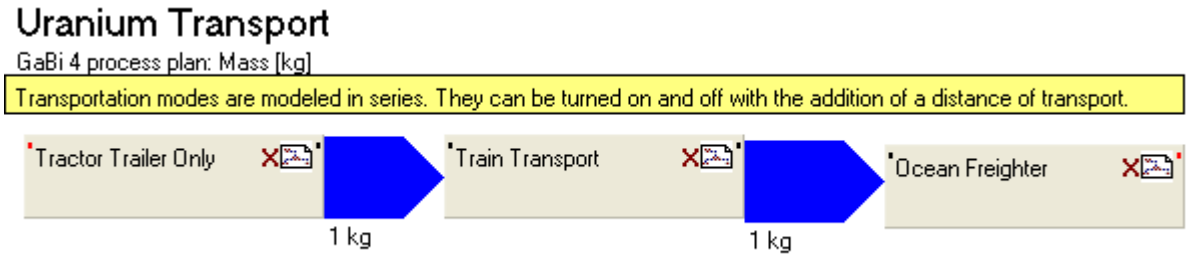
US: ASSEMBLY: COAL MINE CONSTRUCTION & OPERATION NETL

US: Uranium Mining Mixer: US NETL

US: Assembly: Uranium Supply to Conversion Facility NETL

LC Stage #2 (RMT) includes the transport of the fuel assembly facility to the energy conversion facility (LC Stage #3). There are transportation steps between each of the processing steps, but the product of each step undergoes more processing before it reaches the energy conversion facility. The same transportation plan is repeated for each transportation location. The uranium is transported by three modes: truck, ocean freighter, or truck. Each mode has operating emissions. The plan for RMT of uranium is provided in **Figure 3.**

Figure 3: Plan for RMT of Uranium, Including Construction and Operation of Profiles for Transport



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 Uranium

Uranium Transport
- Ocean Freighter
  - US: DIESEL, NATIONAL AVERAGE, 2009 NETL <u-so>
  - US: Ocean Freighter Transport, Operation NETL
- Tractor Trailer Only
  - US: DIESEL, NATIONAL AVERAGE, 2009 NETL <u-so>
  - US: Tractor-trailer Transport, Operation NETL
- Train Transport
  - US: DIESEL, NATIONAL AVERAGE, 2009 NETL <u-so>
  - US: Train Transport, Operation NETL

Parameters and Balances

The parameters for the highest level modeling plans for RMA and RMT of uranium 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 Uranium

Plan	Parameter	Europe	Comment
LC Stage #1			
US: Assembly: Uranium Supply to Conversion Facility NETL	Africa	0.092	[fraction] Adjustable parameter. Portion of uranium extracted in Africa
US: Assembly: Uranium Supply to Conversion Facility NETL	Australia	0.277	[fraction] Adjustable parameter. Portion of uranium extracted in Australia.
US: Assembly: Uranium Supply to Conversion Facility NETL	Canada	0.329	[fraction] Adjustable parameter. Portion of uranium extracted in Canada.
US: Assembly: Uranium Supply to Conversion Facility NETL	Russia	0.232	[fraction] Adjustable parameter. Portion of uranium extracted in Russia.
US: Assembly: Uranium Supply to Conversion Facility NETL	US	0.07	[fraction] Adjustable parameter. Portion of uranium extracted in US.
Transport Conversion to Enrich	MC_ocean_dist	0	[km] Ocean freighter transport distance
Transport Conversion to Enrich	MC_train_dist	0	[km] Train transport distance
Transport Conversion to Enrich	MC_truck_dist	420	[km] Truck transport distance
Transport Mine/Port to Conversion	CE_ocean_dist	0	[km] Ocean freighter transport distance
Transport Mine/Port to Conversion	CE_train_dist	0	[km] Train transport distance
Transport Mine/Port to Conversion	CE_truck_dist	620	[km] Truck transport distance
Transport Enrich to Fuel Assembly	EF_ocean_dist	8850	[km] Ocean freighter transport distance
Transport Enrich to Fuel Assembly	EF_train_dist	0	[km] Train transport distance
Transport Enrich to Fuel Assembly	EF_truck_dist	2130	[km] Truck transport distance

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

Process or Category	Cradle to Gate	Cradle to Gate (RMA)	Gate to Gate (RMT)
Inputs			
Flows	1.856E+04	1.856E+04	6.114E-02
Resources	1.856E+04	1.856E+04	6.114E-02
Energy resources	3.973E+03	3.973E+03	1.564E-02
Non renewable energy resources	3.973E+03	3.973E+03	1.564E-02
Crude oil (resource)	7.531E+01	7.530E+01	1.375E-02
Crude oil	3.663E-01	3.663E-01	0.000E+00
Crude oil Algeria	2.380E+00	2.380E+00	4.058E-04
Crude oil Angola	1.736E+00	1.736E+00	4.953E-04
Crude oil Argentina	1.543E-02	1.543E-02	5.989E-07
Crude oil Australia	1.287E-01	1.287E-01	5.210E-06
Crude oil Austria	2.161E-02	2.161E-02	1.459E-07
Crude oil Bolivia	2.026E-06	2.026E-06	1.788E-12
Crude oil Brazil	1.254E-01	1.254E-01	7.542E-06
Crude oil Brunei	6.005E-08	6.004E-08	9.434E-12
Crude oil Bulgaria	1.101E-06	1.101E-06	9.943E-13
Crude oil Cameroon	1.169E-01	1.169E-01	1.100E-06
Crude oil Canada	5.979E+00	5.977E+00	2.290E-03
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	2.079E-05	2.079E-05	7.793E-11
Crude oil China	9.445E-03	9.443E-03	2.686E-06
Crude oil CIS	1.185E+01	1.185E+01	4.012E-05
Crude oil Colombia	3.942E-02	3.942E-02	1.409E-06
Crude oil Czech Republic	2.045E-03	2.045E-03	1.375E-08
Crude oil Denmark	1.037E+00	1.037E+00	8.163E-06
Crude oil Ecuador	8.582E-01	8.579E-01	3.294E-04
Crude oil Egypt	8.403E-02	8.403E-02	9.790E-07
Crude oil France	3.599E-02	3.599E-02	3.395E-07
Crude oil Gabon	3.469E-02	3.469E-02	1.070E-06
Crude oil Germany	8.400E-01	8.400E-01	9.973E-07
Crude oil Greece	4.140E-03	4.140E-03	2.865E-08
Crude oil Hungary	1.482E-03	1.482E-03	1.171E-08

Crude oil India	3.047E-07	3.047E-07	7.038E-13
Crude oil Indonesia	5.050E-02	5.049E-02	2.583E-06
Crude oil Iran	6.348E-01	6.348E-01	1.126E-05
Crude oil Iraq	1.751E+00	1.750E+00	5.098E-04
Crude oil Ireland	2.433E-07	2.433E-07	7.051E-13
Crude oil Italy	1.617E-01	1.617E-01	1.467E-06
Crude oil Japan	8.822E-10	8.819E-10	3.505E-13
Crude oil Kuwait	1.043E+00	1.042E+00	3.191E-04
Crude oil Libya	2.889E+00	2.889E+00	1.008E-05
Crude oil Malaysia	3.354E-08	3.354E-08	4.846E-12
Crude oil Mexico	3.515E+00	3.514E+00	1.209E-03
Crude oil Middle East	0.000E+00	0.000E+00	0.000E+00
Crude oil Netherlands	1.986E-01	1.986E-01	1.048E-06
Crude oil New Zealand	7.612E-03	7.611E-03	3.321E-07
Crude oil Nigeria	3.799E+00	3.798E+00	1.019E-03
Crude oil North Africa	0.000E+00	0.000E+00	0.000E+00
Crude oil Norway	7.683E+00	7.683E+00	4.524E-05
Crude oil Oman	8.660E-03	8.659E-03	1.126E-06
Crude oil Poland	3.273E-02	3.273E-02	5.629E-08
Crude oil Qatar	1.054E-02	1.054E-02	2.221E-06
Crude oil Romania	8.732E-03	8.732E-03	5.821E-08
Crude oil Saudi Arabia	5.151E+00	5.150E+00	1.115E-03
Crude oil Slovakia	1.083E-05	1.082E-05	7.771E-10
Crude oil South Africa	1.489E-08	1.489E-08	9.442E-13
Crude oil Spain	6.741E-03	6.741E-03	4.826E-08
Crude oil Syria	3.913E-06	3.913E-06	5.567E-12
Crude oil Trinidad and Tobago	1.069E-02	1.068E-02	3.637E-07
Crude oil Tunisia	1.031E-01	1.031E-01	4.534E-07
Crude oil Turkey	2.107E-09	2.107E-09	5.964E-17
Crude oil United Arab Emirates	2.677E-02	2.676E-02	4.586E-06
Crude oil United Kingdom	6.210E+00	6.210E+00	3.938E-05
Crude oil USA	1.293E+01	1.293E+01	4.772E-03
Crude oil Venezuela	3.407E+00	3.406E+00	1.098E-03
Hard coal (resource)	7.313E+01	7.313E+01	3.074E-04
Hard coal	1.501E-02	1.501E-02	0.000E+00
Hard Coal (Illinois No 6)	4.029E+01	4.029E+01	0.000E+00
Hard coal Australia	5.100E+00	5.100E+00	1.379E-06
Hard coal Belgium	2.240E-04	2.240E-04	4.721E-10

Hard coal Bosnia and Herzegovina	2.630E-02	2.630E-02	8.320E-11
Hard coal Brazil	1.519E-03	1.519E-03	4.251E-09
Hard coal Canada	4.362E+00	4.362E+00	1.031E-05
Hard coal Chile	2.167E-03	2.167E-03	8.125E-09
Hard coal China	3.130E-01	3.130E-01	3.593E-07
Hard coal CIS	6.957E-01	6.957E-01	3.300E-07
Hard coal Colombia	1.531E+00	1.531E+00	4.053E-06
Hard coal Czech Republic	2.466E-01	2.466E-01	9.168E-08
Hard coal France	3.792E-01	3.792E-01	1.046E-08
Hard coal Germany	5.871E+00	5.871E+00	1.969E-06
Hard coal India	2.251E-05	2.251E-05	3.624E-11
Hard coal Indonesia	1.310E-01	1.310E-01	6.459E-07
Hard coal Italy	2.230E-04	2.230E-04	8.925E-11
Hard coal Japan	9.110E-09	9.110E-09	1.419E-13
Hard coal Malaysia	1.444E-09	1.444E-09	1.696E-13
Hard coal Mexico	6.799E-04	6.798E-04	1.355E-07
Hard coal New Zealand	1.777E-03	1.777E-03	6.753E-09
Hard coal Poland	2.072E+00	2.072E+00	6.245E-07
Hard coal Portugal	1.291E-07	1.291E-07	9.378E-12
Hard coal South Africa	3.170E+00	3.170E+00	1.171E-06
Hard coal Spain	2.259E-02	2.259E-02	8.553E-08
Hard coal Turkey	9.077E-06	9.077E-06	2.697E-13
Hard coal United Kingdom	2.655E-01	2.655E-01	1.809E-07
Hard coal USA	8.222E+00	8.222E+00	2.847E-04
Hard coal Venezuela	3.485E-01	3.485E-01	1.347E-06
Hard coal Vietnam	5.376E-02	5.376E-02	1.040E-08
Hard Coal, Pure, Fuel	4.279E-04	4.279E-04	0.000E+00
Hard Coal, Raw, Fuel	3.351E-03	3.351E-03	0.000E+00
Lignite (resource)	1.097E+01	1.097E+01	2.593E-05
Lignite	7.035E-05	7.035E-05	0.000E+00
Lignite Australia	1.410E-01	1.410E-01	6.211E-07
Lignite Austria	2.285E-03	2.285E-03	1.261E-08
Lignite Bosnia and Herzegovina	6.075E-02	6.075E-02	1.914E-10
Lignite Bulgaria	7.763E-03	7.763E-03	3.828E-10
Lignite Canada	6.303E-02	6.303E-02	2.679E-06
Lignite CIS	2.845E-02	2.845E-02	4.511E-08
Lignite Czech Republic	1.204E-01	1.204E-01	5.314E-08
Lignite France	1.408E-01	1.408E-01	2.519E-09

Lignite Germany	4.533E-03	4.533E-03	0.000E+00
Lignite Germany (Central Germany)	1.157E+00	1.157E+00	8.359E-06
Lignite Germany (Lausitz)	3.078E+00	3.078E+00	1.283E-06
Lignite Germany (Rheinisch)	5.582E+00	5.582E+00	2.359E-06
Lignite Greece	2.607E-01	2.607E-01	1.961E-08
Lignite Hungary	2.523E-03	2.523E-03	1.220E-09
Lignite India	4.503E-06	4.503E-06	7.250E-12
Lignite Macedonia	4.018E-03	4.018E-03	3.291E-10
Lignite Poland	8.182E-02	8.182E-02	2.349E-08
Lignite Romania	6.344E-05	6.344E-05	7.651E-11
Lignite Serbia and Montenegro	6.953E-04	6.953E-04	1.481E-09
Lignite Slovakia	1.013E-02	1.013E-02	1.931E-10
Lignite Slovenia	7.183E-02	7.183E-02	2.221E-09
Lignite Spain	4.753E-02	4.753E-02	1.798E-07
Lignite Turkey	2.612E-07	2.612E-07	7.391E-15
Lignite USA	1.070E-01	1.070E-01	1.029E-05
Natural gas (resource)	3.813E+03	3.813E+03	1.554E-03
Natural gas	2.982E-02	2.982E-02	0.000E+00
Natural gas Algeria	2.133E+00	2.132E+00	3.254E-05
Natural gas Angola	2.142E-01	2.141E-01	6.061E-05
Natural gas Argentina	1.291E-02	1.291E-02	9.138E-08
Natural gas Australia	2.381E-02	2.381E-02	3.971E-07
Natural gas Austria	3.761E-03	3.761E-03	1.567E-08
Natural gas Bolivia	4.073E-03	4.073E-03	3.593E-09
Natural gas Brazil	1.952E-02	1.952E-02	4.573E-07
Natural gas Brunei	5.297E-04	5.296E-04	8.203E-08
Natural gas Bulgaria	1.312E-06	1.312E-06	1.262E-13
Natural gas Cameroon	2.899E-02	2.899E-02	2.725E-07
Natural gas Canada	1.038E+00	1.038E+00	2.863E-04
Natural gas Chile	4.758E-03	4.758E-03	1.854E-08
Natural gas China	6.759E-04	6.758E-04	1.465E-07
Natural gas CIS	5.174E+00	5.174E+00	3.326E-06
Natural gas Colombia	3.637E-03	3.636E-03	1.485E-07
Natural gas Czech Republic	2.139E-04	2.139E-04	7.928E-10
Natural gas Denmark	2.159E-01	2.159E-01	4.352E-07
Natural gas Ecuador	5.287E-02	5.285E-02	2.008E-05
Natural gas Egypt	4.745E-03	4.745E-03	7.214E-08
Natural gas France	2.643E-01	2.643E-01	2.307E-08

	Natural gas Gabon	5.066E-03	5.066E-03	1.575E-07
	Natural gas Germany	1.846E+00	1.846E+00	9.620E-07
	Natural gas Greece	2.772E-04	2.772E-04	1.751E-09
	Natural gas Hungary	1.555E-03	1.555E-03	4.349E-10
	Natural gas India	1.725E-06	1.725E-06	2.798E-12
	Natural gas Indonesia	2.708E-03	2.708E-03	1.681E-07
	Natural gas Iran	4.559E-02	4.559E-02	8.548E-07
	Natural gas Iraq	7.855E-02	7.853E-02	2.068E-05
	Natural gas Ireland	5.565E-04	5.565E-04	1.573E-09
	Natural gas Italy	2.488E-02	2.488E-02	1.040E-07
	Natural gas Japan	3.049E-06	3.047E-06	1.210E-09
	Natural gas Kuwait	4.398E-02	4.397E-02	1.155E-05
	Natural gas Libyan	9.776E-02	9.776E-02	4.258E-07
	Natural gas Malaysia	4.988E-04	4.987E-04	8.360E-08
	Natural gas Mexico	2.064E-01	2.063E-01	6.735E-05
	Natural gas Netherlands	2.627E+00	2.627E+00	1.221E-06
	Natural gas New Zealand	5.082E-04	5.082E-04	2.219E-08
	Natural gas Nigeria	6.868E-01	6.866E-01	1.805E-04
	Natural gas Norway	3.882E+00	3.882E+00	1.590E-06
	Natural gas Oman	2.370E-03	2.370E-03	1.433E-07
	Natural gas Poland	3.143E-03	3.143E-03	2.679E-09
	Natural gas Qatar	9.305E-03	9.304E-03	1.272E-06
	Natural gas Romania	3.317E-04	3.317E-04	3.423E-09
	Natural gas Saudi Arabia	2.505E-01	2.505E-01	3.756E-05
	Natural gas Slovakia	1.751E-04	1.751E-04	2.387E-11
	Natural gas South Africa	5.092E-05	5.092E-05	9.393E-11
	Natural gas Spain	8.300E-04	8.300E-04	5.588E-09
	Natural gas Syria	4.205E-07	4.205E-07	5.982E-13
	Natural gas Trinidad and Tobago	2.706E-02	2.705E-02	5.076E-06
	Natural gas Tunisia	1.161E-02	1.161E-02	4.542E-08
	Natural gas Turkey	2.131E-10	2.131E-10	6.031E-18
	Natural gas United Arab Emirates	2.872E-03	2.872E-03	1.811E-07
	Natural gas United Kingdom	1.468E+00	1.468E+00	2.162E-06
	Natural gas USA	3.540E+03	3.540E+03	7.691E-04
	Natural gas Venezuela	1.661E-01	1.661E-01	4.693E-05
	Natural Gas, Fuel	1.336E-03	1.336E-03	0.000E+00
	Natural gas, Raw Material	2.527E+02	2.527E+02	0.000E+00
	Pit gas	6.649E-05	6.649E-05	0.000E+00

Pit Methane	2.598E-01	2.598E-01	1.187E-06
Uranium (resource)	4.621E-03	4.621E-03	7.401E-09
Nuclear energy	0.000E+00	0.000E+00	0.000E+00
Uranium natural	4.621E-03	4.621E-03	7.401E-09
Renewable energy resources	6.927E-03	6.927E-03	1.933E-08
Biomass	5.204E-04	5.204E-04	0.000E+00
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	2.583E-06	2.583E-06	0.000E+00
Wood	6.404E-03	6.404E-03	1.933E-08
Unspecified	0.000E+00	0.000E+00	0.000E+00
Energy unspecified (APME)	0.000E+00	0.000E+00	0.000E+00
Thermal Energy from Diesel Fuel	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	1.459E+04	1.459E+04	4.550E-02
Non renewable elements	1.804E+00	1.804E+00	3.591E-13
Aluminum	1.354E-06	1.354E-06	0.000E+00
Chromium	1.434E-07	1.434E-07	0.000E+00
Copper	5.035E-06	5.035E-06	0.000E+00

Iron	1.794E+00	1.794E+00	8.247E-15
Lead	1.482E-07	1.482E-07	3.478E-19
Magnesium	1.052E-12	1.052E-12	0.000E+00
Mercury	1.438E-07	1.438E-07	0.000E+00
Nickel	2.198E-09	2.198E-09	0.000E+00
Phosphorus	1.312E-07	1.312E-07	0.000E+00
Sulphur	-2.113E-05	-2.113E-05	3.508E-13
Zinc	9.985E-03	9.985E-03	0.000E+00
Non renewable resources	6.356E+02	6.356E+02	5.042E-03
Barium sulphate	3.283E-12	3.283E-12	3.565E-17
Basalt	6.053E-02	6.053E-02	6.830E-07
Bauxite	2.260E+00	2.260E+00	8.480E-08
Bentonite	2.602E-01	2.601E-01	6.309E-05
Calcium carbonate (CaCO3)	8.812E-03	8.812E-03	0.000E+00
Calcium chloride	3.362E-10	3.362E-10	3.650E-15
Chalk (Calciumcarbonate)	1.445E-32	1.445E-32	0.000E+00
Chromium ore (39%)	6.684E-04	6.684E-04	1.595E-09
Clay	4.001E-02	4.001E-02	4.064E-06
Colemanite ore	9.902E-05	9.902E-05	1.437E-10
Copper - Gold - Silver - ore (1,0% Cu; 0,4 g/t Au; 66 g/t Ag)	8.560E+00	8.560E+00	3.903E-09
Copper - Gold - Silver - ore (1,1% Cu; 0,01 g/t Au; 2,86 g/t Ag)	5.215E+00	5.215E+00	2.378E-09
Copper - Gold - Silver - ore (1,16% Cu; 0,002 g/t Au; 1,06 g/t Ag)	2.943E+00	2.943E+00	1.342E-09
Copper - Molybdenum - Gold - Silver - ore (1,13% Cu; 0,02% Mo; 0,01 g/t Au; 2,86 g/t Ag)	2.028E-03	2.028E-03	3.270E-09
Copper ore (0.14%)	1.749E-02	1.749E-02	3.530E-08
Copper ore (1.2%)	8.877E-01	8.877E-01	4.048E-10
Copper ore (4%)	2.342E-13	2.341E-13	2.313E-17
Copper ore (sulphidic, 1.1%)	6.043E-04	6.043E-04	2.744E-14
Dolomite	1.092E-01	1.092E-01	9.672E-11
Feldspar (aluminum silicates)	5.679E-08	5.679E-08	0.000E+00
Ferro manganese	7.645E-08	7.645E-08	1.739E-19
Fluorspar (calcium fluoride; fluorite)	1.668E-02	1.668E-02	1.147E-10
Granite	1.082E-14	1.082E-14	0.000E+00
Gravel	4.609E-02	4.609E-02	0.000E+00
Gypsum (natural gypsum)	1.592E-02	1.592E-02	2.277E-06
Heavy spar (BaSO4)	6.300E-01	6.299E-01	1.526E-04
Ilmenite (titanium ore)	1.222E-03	1.222E-03	0.000E+00

Inert rock	3.858E+02	3.858E+02	4.620E-03
Iron ore (56,86%)	9.847E+00	9.847E+00	4.641E-05
Iron ore (65%)	1.884E-04	1.884E-04	1.955E-09
Kaolin ore	1.776E-04	1.776E-04	2.420E-10
Lead - zinc ore (4.6%-0.6%)	5.189E-02	5.187E-02	1.230E-05
Limestone (calcium carbonate)	8.985E+01	8.985E+01	1.198E-04
Magnesit (Magnesium carbonate)	3.581E-07	3.580E-07	4.492E-11
Magnesium chloride leach (40%)	8.462E-02	8.461E-02	9.556E-07
Manganese ore	1.340E-04	1.340E-04	3.160E-10
Manganese ore (R.O.M.)	9.332E-02	9.332E-02	4.819E-07
Molybdenite (Mo 0,24%)	1.239E-03	1.239E-03	2.011E-09
Molybdenum ore (0.1%)	6.255E-06	6.255E-06	0.000E+00
Natural Aggregate	1.376E+00	1.376E+00	8.975E-06
Nickel ore (1,5%)	1.045E-05	1.045E-05	4.006E-13
Nickel ore (1.6%)	3.256E-01	3.256E-01	1.700E-06
Olivine	7.896E-07	7.896E-07	1.913E-18
Peat	8.522E-03	8.522E-03	1.158E-07
Phosphate ore	1.353E-06	1.353E-06	6.111E-11
Phosphorus minerals	1.362E-06	1.362E-06	4.259E-11
Phosphorus ore (29% P2O5)	1.127E-08	1.127E-08	0.000E+00
Potassium chloride	5.515E-05	5.515E-05	2.052E-11
Precious metal ore (R.O.M)	5.863E-05	5.863E-05	1.220E-10
Quartz sand (silica sand; silicon dioxide)	3.629E-01	3.629E-01	1.606E-06
Raw pumice	1.510E-05	1.510E-05	2.351E-11
Rutile (titanium ore)	2.194E-09	2.194E-09	0.000E+00
sand	2.920E-05	2.920E-05	0.000E+00
Slate	3.799E-07	3.799E-07	3.217E-18
Sodium chloride (rock salt)	1.198E+02	1.198E+02	3.764E-08
Sodium nitrate	7.377E-13	7.377E-13	0.000E+00
Sodium sulphate	1.459E-05	1.459E-05	9.405E-14
Soil	3.501E+00	3.501E+00	3.634E-06
Sulphur (bonded)	2.648E-08	2.648E-08	1.715E-13
Talc	2.738E-06	2.738E-06	2.253E-11
Tin ore	2.847E-13	2.847E-13	3.092E-18
Titanium ore	1.203E-03	1.203E-03	1.581E-07
Zinc - copper ore (4.07%-2.59%)	1.954E+00	1.954E+00	2.050E-06
Zinc - lead - copper ore (12%-3%-2%)	1.467E+00	1.467E+00	8.527E-07
Zinc - lead ore (4.21%-4.96%)	7.996E-14	7.995E-14	7.898E-18

Zinc ore (4%)	-7.988E-03	-7.988E-03	0.000E+00
Zinc ore (sulphidic, 4%)	1.120E-12	1.120E-12	3.627E-17
Renewable resources	1.395E+04	1.395E+04	4.046E-02
Water	1.338E+04	1.338E+04	3.369E-02
Water	6.316E+01	6.314E+01	2.083E-02
Water (feed water)	5.207E-02	5.207E-02	0.000E+00
Water (ground water)	4.125E+03	4.125E+03	2.118E-03
Water (lake water)	4.246E+02	4.246E+02	0.000E+00
Water (municipal)	3.912E-02	3.912E-02	0.000E+00
Water (municipal)	3.783E+02	3.783E+02	0.000E+00
Water (river water)	0.000E+00	0.000E+00	0.000E+00
Water (sea water)	1.853E+00	1.853E+00	1.339E-04
Water (surface water)	8.385E+03	8.385E+03	1.061E-02
Water (well water)	4.455E-02	4.455E-02	0.000E+00
Water (well-produced water)	7.254E-01	7.254E-01	0.000E+00
Water (with river silt)	1.031E-10	1.031E-10	0.000E+00
Water,turbine use, unspecified natural origin	0.000E+00	0.000E+00	0.000E+00
Air	5.679E+02	5.679E+02	6.766E-03
Carbon dioxide	1.698E+00	1.698E+00	6.091E-06
Nitrogen	3.988E-03	3.988E-03	6.878E-13
Oxygen	0.000E+00	0.000E+00	8.306E-09
Unspecified	3.885E-04	3.885E-04	0.000E+00
Unspecified minerals	8.839E-05	8.839E-05	0.000E+00
Unspecified resources	3.001E-04	3.001E-04	0.000E+00
Output			
Flows	2.863E+04	2.863E+04	3.039E-02
Resources	1.148E+04	1.148E+04	8.195E-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
Hard coal (resource)	0.000E+00	0.000E+00	0.000E+00
Hard Coal (Illinois No 6)	0.000E+00	0.000E+00	0.000E+00
Natural gas (resource)	0.000E+00	0.000E+00	0.000E+00
Natural gas CIS	0.000E+00	0.000E+00	0.000E+00
Natural gas Denmark	0.000E+00	0.000E+00	0.000E+00
Natural gas Germany	0.000E+00	0.000E+00	0.000E+00
Natural gas Netherlands	0.000E+00	0.000E+00	0.000E+00
Natural gas Norway	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
Thermal Energy from Diesel Fuel	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	1.148E+04	1.148E+04	8.195E-03
Renewable resources	1.148E+04	1.148E+04	8.195E-03
Water	1.148E+04	1.148E+04	8.195E-03
Water	0.000E+00	0.000E+00	0.000E+00
Water (Evaporated)	9.339E+00	9.339E+00	0.000E+00
Water (feed water)	0.000E+00	0.000E+00	0.000E+00
Water (ground water)	0.000E+00	0.000E+00	0.000E+00
Water (lake water)	0.000E+00	0.000E+00	0.000E+00
Water (river water)	5.768E+03	5.768E+03	8.182E-03
Water (sea water)	0.000E+00	0.000E+00	0.000E+00
Water (wastewater)	5.273E+03	5.273E+03	1.238E-05
Water (wastewater)	4.301E+02	4.301E+02	0.000E+00
Nitrogen	0.000E+00	0.000E+00	0.000E+00
Oxygen	8.049E-01	8.049E-01	0.000E+00
Ecoinvent	9.876E-02	9.876E-02	0.000E+00
Long-term emission	9.876E-02	9.876E-02	0.000E+00
Fresh water	9.876E-02	9.876E-02	0.000E+00
Chloride	9.876E-02	9.876E-02	0.000E+00
Dissolved organic carbon, DOC (Ecoinvent)	1.605E-08	1.605E-08	0.000E+00
Total organic carbon, TOC (Ecoinvent)	0.000E+00	0.000E+00	0.000E+00
Emissions to air	1.769E+03	1.769E+03	2.169E-02
Heavy metals to air	5.731E-04	5.731E-04	2.838E-09
Antimony	6.424E-07	6.424E-07	9.530E-12
Arsenic (+V)	4.869E-06	4.869E-06	1.105E-10
Arsenic trioxide	3.508E-11	3.507E-11	8.467E-15
Cadmium (+II)	9.778E-07	9.778E-07	8.104E-12
Chromium (+III)	1.255E-08	1.255E-08	1.771E-12
Chromium (+VI)	1.403E-11	1.403E-11	0.000E+00
Chromium (unspecified)	7.419E-06	7.419E-06	1.700E-11
Cobalt	2.189E-06	2.189E-06	9.615E-12

Copper (+II)	5.403E-05	5.403E-05	4.483E-11
Heavy metals to air (unspecified)	4.743E-08	4.743E-08	1.225E-13
Hydrogen arsenic (arsine)	2.911E-09	2.911E-09	7.027E-13
Iron	1.418E-05	1.418E-05	2.217E-11
Lanthanides	5.520E-10	5.520E-10	2.656E-15
Lead (+II)	7.467E-05	7.467E-05	2.058E-10
Manganese (+II)	1.367E-05	1.367E-05	7.206E-11
Mercury (+II)	6.779E-06	6.779E-06	1.708E-11
Molybdenum	8.864E-07	8.864E-07	1.468E-12
Nickel (+II)	3.577E-05	3.577E-05	2.776E-10
Palladium	9.305E-15	9.305E-15	1.010E-19
Rhodium	8.982E-15	8.982E-15	9.753E-20
Selenium	9.515E-06	9.514E-06	2.462E-10
Silver	2.754E-11	2.754E-11	2.378E-20
Tellurium	1.648E-09	1.648E-09	2.361E-13
Thallium	1.187E-07	1.187E-07	1.736E-12
Tin (+IV)	4.764E-06	4.764E-06	9.362E-11
Titanium	8.963E-08	8.963E-08	1.657E-13
Vanadium (+III)	1.699E-04	1.699E-04	1.487E-09
Zinc (+II)	1.725E-04	1.725E-04	2.100E-10
Inorganic emissions to air	1.324E+03	1.324E+03	1.681E-02
Ammonia	6.009E-01	6.009E-01	1.165E-07
Ammonium	2.442E-09	2.442E-09	3.349E-15
Ammonium nitrate	1.317E-10	1.317E-10	1.005E-15
Argon	5.550E-04	5.550E-04	0.000E+00
Barium	4.067E-04	4.066E-04	9.624E-08
Beryllium	9.208E-08	9.208E-08	1.949E-12
Boron compounds (unspecified)	1.030E-04	1.030E-04	1.738E-09
Bromine	3.062E-05	3.062E-05	7.401E-10
Carbon dioxide	8.134E+02	8.134E+02	1.424E-02
Carbon dioxide (biotic)	2.195E-05	2.195E-05	8.011E-09
Carbon dioxide (biotic)	5.320E-01	5.320E-01	1.597E-06
Carbon disulphide	8.517E-09	8.517E-09	1.146E-14
Carbon monoxide	2.417E+00	2.417E+00	2.044E-05
Carbon monoxide (biotic)	1.093E-08	1.093E-08	0.000E+00
Chloride (unspecified)	1.287E-04	1.287E-04	2.488E-10
Chlorine	8.363E-06	8.363E-06	4.678E-14
Cyanide (unspecified)	3.049E-06	3.049E-06	8.723E-12

Fluoride	4.928E-04	4.928E-04	2.004E-10
Fluorides	2.427E-07	2.426E-07	9.460E-11
Fluorine	1.152E-08	1.152E-08	8.921E-14
Helium	1.298E-04	1.298E-04	3.258E-11
Hydrogen	1.024E-03	1.024E-03	7.565E-09
Hydrogen bromine (hydrobromic acid)	2.641E-07	2.641E-07	2.113E-12
Hydrogen chloride	2.327E-03	2.327E-03	1.075E-08
Hydrogen cyanide (prussic acid)	4.091E-07	4.091E-07	7.609E-13
Hydrogen fluoride	4.794E-04	4.794E-04	1.770E-09
Hydrogen iodide	2.843E-10	2.843E-10	3.285E-16
Hydrogen phosphorous	1.052E-08	1.052E-08	4.947E-16
Hydrogen sulphide	1.330E-03	1.329E-03	7.247E-08
Lead dioxide	1.978E-08	1.978E-08	2.484E-16
Nitrogen (atmospheric nitrogen)	4.766E-02	4.766E-02	1.155E-06
Nitrogen (N-compounds)	1.085E-04	1.085E-04	0.000E+00
Nitrogen dioxide	1.076E-02	1.076E-02	2.848E-06
Nitrogen monoxide	8.339E-09	8.338E-09	3.019E-13
Nitrogen oxides	4.057E+00	4.057E+00	1.252E-05
Nitrous oxide (laughing gas)	3.351E-02	3.351E-02	3.108E-07
Oxygen	1.025E-01	1.025E-01	4.293E-06
Scandium	1.062E-10	1.062E-10	1.294E-15
Steam	5.011E+02	5.011E+02	2.485E-03
Strontium	8.287E-09	8.287E-09	5.023E-14
Sulphur dioxide	2.078E+00	2.078E+00	2.398E-05
Sulphur hexafluoride	3.331E-05	3.331E-05	1.715E-14
sulphur oxide	2.843E-02	2.842E-02	1.109E-05
Sulphuric acid	2.995E-06	2.995E-06	4.528E-11
Tin oxide	9.088E-12	9.088E-12	2.161E-17
Unspecified Particles	7.235E-04	7.235E-04	0.000E+00
Zinc oxide	1.818E-11	1.818E-11	4.322E-17
Zinc sulphate	7.314E-08	7.312E-08	1.770E-11
Organic emissions to air (group VOC)	1.265E+01	1.265E+01	8.757E-05
Group NMVOC to air	1.207E+00	1.207E+00	2.556E-05
Group PAH to air	2.249E-04	2.249E-04	5.166E-10
Anthracene	9.032E-09	9.030E-09	2.389E-12
Benzo{a}anthracene	4.545E-09	4.544E-09	1.202E-12
Benzo{a}pyrene	2.651E-06	2.651E-06	6.093E-13
Benzo{ghi}perylene	4.054E-09	4.053E-09	1.073E-12

Benzofluoranthene	8.109E-09	8.107E-09	2.145E-12
Chrysene	1.116E-08	1.116E-08	2.953E-12
Dibenz(a)anthracene	2.526E-09	2.526E-09	6.683E-13
Indeno[1,2,3-cd]pyrene	3.017E-09	3.016E-09	7.980E-13
Naphthalene	9.486E-07	9.483E-07	2.510E-10
Phenanthrene	2.980E-07	2.979E-07	7.884E-11
Polycyclic aromatic hydrocarbons (PAH)	2.210E-04	2.210E-04	1.750E-10
Halogenated organic emissions to air	1.738E-04	1.738E-04	1.651E-10
Dichloroethane (ethylene dichloride)	2.516E-06	2.516E-06	0.000E+00
Dichloromethane (methylene chloride)	1.627E-08	1.627E-08	1.412E-18
Dioxins (unspec.)	6.986E-12	6.986E-12	6.921E-17
Halogenated hydrocarbons (unspecified)	7.728E-07	7.728E-07	6.979E-19
Halon (1301)	0.000E+00	0.000E+00	0.000E+00
Polychlorinated biphenyls (PCB unspecified)	7.373E-09	7.372E-09	1.544E-12
Polychlorinated dibenzo-p-dioxins (2,3,7,8 - TCDD)	1.890E-11	1.890E-11	1.035E-16
R 11 (trichlorofluoromethane)	3.386E-05	3.386E-05	5.400E-11
R 114 (dichlorotetrafluoroethane)	3.468E-05	3.468E-05	5.530E-11
R 116 (hexafluoroethane)	7.754E-06	7.754E-06	0.000E+00
R 12 (dichlorodifluoromethane)	7.280E-06	7.280E-06	1.161E-11
R 13 (chlorotrifluoromethane)	4.571E-06	4.571E-06	7.290E-12
R 22 (chlorodifluoromethane)	7.957E-06	7.957E-06	1.269E-11
Tetrafluoromethane	6.984E-05	6.984E-05	1.023E-12
Vinyl chloride (VCM; chloroethene)	4.548E-06	4.548E-06	2.169E-11
Acetaldehyde (Ethanal)	2.548E-05	2.548E-05	4.214E-10
Acetic acid	1.063E-04	1.063E-04	7.725E-10
Acetone (dimethylcetone)	2.463E-05	2.463E-05	3.897E-10
Acrolein	6.374E-08	6.372E-08	1.686E-11
Aldehyde (unspecified)	6.856E-06	6.856E-06	2.049E-11
Alkane (unspecified)	2.334E-04	2.334E-04	4.492E-09
Alkene (unspecified)	1.582E-04	1.582E-04	3.866E-09
Aromatic hydrocarbons (unspecified)	8.959E-06	8.959E-06	6.588E-11
Benzene	2.078E-04	2.078E-04	2.358E-09
Butadiene	2.068E-09	2.068E-09	3.219E-15
Butane	7.046E-03	7.045E-03	1.138E-06
Butane (n-butane)	2.207E-04	2.207E-04	1.194E-09
Caprolactam	5.079E-11	5.079E-11	0.000E+00
Cumene (isopropylbenzene)	8.410E-16	8.410E-16	0.000E+00

Cyclohexane (hexahydro benzene)	1.891E-07	1.891E-07	2.626E-13
Diethylamine	5.263E-14	5.263E-14	8.372E-20
Ethane	2.158E-02	2.158E-02	3.064E-06
Ethanol	6.164E-05	6.164E-05	3.657E-10
Ethene (ethylene)	2.429E-06	2.429E-06	7.140E-11
Ethyl benzene	1.552E-04	1.552E-04	3.874E-09
Fluoranthene	2.942E-08	2.941E-08	7.782E-12
Fluorene	9.335E-08	9.332E-08	2.469E-11
Formaldehyde (methanal)	2.909E-04	2.909E-04	2.483E-09
Heptane (isomers)	1.980E-04	1.980E-04	3.892E-08
Hexamethylene diamine (HMDA)	1.216E-10	1.216E-10	1.894E-16
Hexane (isomers)	3.029E-04	3.029E-04	5.775E-08
Mercaptan (unspecified)	6.198E-06	6.198E-06	2.880E-10
Methanethiol	1.840E-05	1.840E-05	0.000E+00
Methanol	6.095E-05	6.095E-05	3.310E-10
NMVOC (unspecified)	1.140E+00	1.140E+00	1.496E-05
Octane	1.089E-04	1.089E-04	2.141E-08
Pentane (n-pentane)	2.936E-03	2.935E-03	3.875E-07
Phenol (hydroxy benzene)	1.490E-09	1.490E-09	1.222E-14
Propane	3.289E-02	3.289E-02	5.847E-06
Propene (propylene)	1.407E-05	1.407E-05	3.485E-10
Propionic acid (propane acid)	1.514E-08	1.514E-08	1.965E-13
Styrene	2.099E-10	2.099E-10	2.909E-16
Toluene (methyl benzene)	7.397E-05	7.397E-05	2.397E-09
Trimethylbenzene	8.853E-11	8.853E-11	2.105E-16
Xylene (dimethyl benzene)	6.480E-04	6.480E-04	1.649E-08
Hydrocarbons (unspecified)	1.860E-04	1.860E-04	0.000E+00
Methane	1.144E+01	1.144E+01	5.843E-05
Methane (biotic)	5.416E-04	5.416E-04	0.000E+00
Organic chlorine compounds	5.382E-07	5.382E-07	5.034E-16
Unspecified Organic Compounds	5.028E-10	5.028E-10	0.000E+00
VOC (unspecified)	7.532E-03	7.528E-03	3.583E-06
Other emissions to air	4.312E+02	4.312E+02	4.793E-03
Aldehydes, unspecified	2.514E-10	2.514E-10	0.000E+00
Exhaust	3.605E+02	3.605E+02	4.779E-03
non used primary energy from wind power	0.000E+00	0.000E+00	0.000E+00
Particulate Matter, unspecified	2.050E-03	2.049E-03	7.175E-07
Sand (Silica) (SiO2)	4.793E-06	4.793E-06	0.000E+00

Unused primary energy from solar energy	0.000E+00	0.000E+00	0.000E+00
Used air	7.063E+01	7.063E+01	1.412E-05
Waste heat	0.000E+00	0.000E+00	0.000E+00
Particles to air	7.351E-01	7.351E-01	1.201E-06
Dust (PM10)	2.784E-01	2.784E-01	7.686E-08
Dust (PM2,5 - PM10)	1.922E-03	1.921E-03	7.021E-07
Dust (PM2.5)	1.219E-02	1.219E-02	2.127E-07
Dust (Portland cement kiln)	3.358E-01	3.358E-01	0.000E+00
Dust (unspecified)	1.068E-01	1.068E-01	2.096E-07
Metals (unspecified)	2.048E-07	2.048E-07	2.464E-15
Unspecified Organic Chlorine Compounds	3.318E-09	3.318E-09	0.000E+00
Wood (dust)	3.354E-09	3.354E-09	7.976E-15
Radioactive emissions to air	1.011E-04	1.011E-04	6.361E-11
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
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)	1.011E-04	1.011E-04	6.361E-11
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	2.591E-13	2.591E-13	0.000E+00
Emissions to fresh water	1.069E+03	1.069E+03	2.279E-04
Analytical measures to fresh water	2.464E+00	2.464E+00	1.179E-06
Adsorbable organic halogen compounds (AOX)	6.433E-05	6.433E-05	2.829E-09
Biological oxygen demand (BOD)	7.359E-02	7.359E-02	6.229E-08
Chemical oxygen demand (COD)	4.156E-02	4.156E-02	1.036E-06
Nitrogenous Matter (unspecified, as N)	1.995E-04	1.995E-04	0.000E+00
Solids (dissolved)	5.193E-01	5.193E-01	9.276E-09
Total Biochemical Oxygen Demand	0.000E+00	0.000E+00	0.000E+00
Total dissolved organic bounded carbon	1.907E-02	1.907E-02	1.086E-14
Total Dissolved Solids	1.785E+00	1.785E+00	0.000E+00
Total organic bounded carbon	2.525E-02	2.525E-02	6.769E-08
Total Suspended Solids	0.000E+00	0.000E+00	0.000E+00
Heavy metals to fresh water	6.054E+02	6.054E+02	2.956E-05
Aluminium	1.382E-03	1.382E-03	0.000E+00
Antimony	1.605E-04	1.605E-04	5.891E-08
Arsenic (+V)	1.123E-03	1.123E-03	1.896E-07
Cadmium (+II)	6.434E-05	6.432E-05	1.937E-08
Chromium (+III)	8.846E-06	8.846E-06	1.456E-11
Chromium (+VI)	1.519E-06	1.519E-06	9.774E-19
Chromium (unspecified)	1.081E-03	1.081E-03	3.277E-07
Cobalt	1.315E-08	1.315E-08	6.917E-13
Copper (+II)	1.078E-03	1.078E-03	2.777E-07
Heavy metals to water (unspecified)	1.055E-05	1.055E-05	1.395E-12
Iron	6.452E-02	6.450E-02	1.416E-05
Lead (+II)	1.850E-03	1.849E-03	6.383E-07
Manganese (+II)	5.251E-02	5.251E-02	8.506E-10
Mercury (+II)	9.005E-06	9.002E-06	3.219E-09
Molybdenum	9.009E-05	9.009E-05	1.589E-10
Nickel (+II)	1.515E+02	1.515E+02	5.052E-06
Selenium	2.210E-04	2.210E-04	2.826E-11
Silver	1.567E-04	1.566E-04	5.745E-08
Strontium	4.089E-04	4.089E-04	4.655E-09
Thallium	1.271E-09	1.271E-09	2.968E-13
Tin (+IV)	1.836E-08	1.836E-08	5.965E-13
Titanium	1.202E-05	1.202E-05	2.013E-11
Unspecified Substance	2.241E-09	2.241E-09	0.000E+00

Uranium	4.538E+02	4.538E+02	0.000E+00
Vanadium (+III)	3.108E-05	3.108E-05	5.175E-11
Zinc (+II)	2.692E-02	2.691E-02	8.768E-06
Inorganic emissions to fresh water	4.567E+02	4.567E+02	1.477E-04
Acid (calculated as H+)	4.516E-04	4.516E-04	2.985E-11
Acidity	0.000E+00	0.000E+00	0.000E+00
Aluminum (+III)	1.998E-02	1.997E-02	6.649E-06
Aluminum ion (+III)	4.957E-12	4.957E-12	0.000E+00
Ammonia	4.701E-01	4.701E-01	7.196E-05
Ammonia, as N	6.301E-09	6.301E-09	0.000E+00
Ammonium (total N)	1.497E-02	1.497E-02	0.000E+00
Ammonium / ammonia	3.495E+02	3.495E+02	1.694E-08
Barium	9.777E-01	9.777E-01	1.055E-08
Beryllium	1.188E-07	1.188E-07	1.905E-13
Bicarbonate	6.390E+00	6.390E+00	0.000E+00
Boron	5.721E-03	5.721E-03	1.839E-09
Bromate	2.162E-08	2.162E-08	0.000E+00
Bromine	1.571E-08	1.571E-08	9.097E-13
Calcium (+II)	1.558E+01	1.558E+01	2.877E-07
Carbonate	5.287E-01	5.287E-01	6.632E-07
Chlorate	1.254E-05	1.254E-05	0.000E+00
Chloride	3.844E+01	3.844E+01	5.741E-05
Chlorine (dissolved)	4.820E-03	4.820E-03	7.484E-09
Copper ion (+II/+III)	2.828E-10	2.828E-10	0.000E+00
Cyanide	1.458E-03	1.457E-03	5.347E-07
Fluoride	1.686E-01	1.686E-01	8.228E-07
Fluorine	1.440E-06	1.440E-06	9.279E-11
Hydrogen chloride	8.760E-07	8.760E-07	1.784E-12
Hydrogen fluoride (hydrofluoric acid)	2.620E-08	2.620E-08	9.135E-13
Hydrogen Ions (H+)	5.003E-07	5.003E-07	0.000E+00
Hydroxide	1.384E-03	1.384E-03	4.937E-11
Inorganic salts and acids (unspecified)	1.581E-13	1.581E-13	0.000E+00
Iron ion (+II/+III)	3.666E-08	3.666E-08	0.000E+00
Magnesium (+III)	9.456E-03	9.456E-03	6.721E-08
Magnesium chloride	2.531E-09	2.531E-09	2.748E-14
Magnesium ion (+II)	5.722E-02	5.722E-02	0.000E+00
Metal ions (unspecific)	5.803E-08	5.803E-08	0.000E+00
Neutral salts	2.914E-07	2.914E-07	4.106E-19

Nickel ion (+III)	1.632E-09	1.632E-09	0.000E+00
Nitrate	6.953E-01	6.953E-01	2.987E-08
Nitrate (as total N)	8.036E-09	8.036E-09	0.000E+00
Nitrogen	4.258E-01	4.258E-01	3.128E-11
Nitrogen (as total N)	3.143E-03	3.143E-03	0.000E+00
Nitrogen organic bounded	6.957E-04	6.957E-04	1.760E-09
Phosphate	7.819E-04	7.819E-04	2.106E-10
Phosphorus	1.743E-02	1.743E-02	6.350E-06
Potassium	1.816E-05	1.816E-05	4.017E-10
Salinity (dissolved salts)	1.840E+00	1.840E+00	0.000E+00
Silicate particles	2.517E-04	2.517E-04	3.851E-13
Sodium (+I)	1.010E+01	1.010E+01	1.378E-06
Sodium chloride (rock salt)	1.472E+00	1.472E+00	7.835E-14
Sodium hypochlorite	6.697E-07	6.697E-07	1.716E-14
Sulfates	1.172E-01	1.172E-01	0.000E+00
Sulphate	4.877E+00	4.877E+00	1.378E-06
Sulphide	9.500E-04	9.499E-04	1.211E-07
Sulphite	3.010E-05	3.010E-05	5.478E-10
Sulphur	4.186E-07	4.186E-07	1.678E-11
Sulphur dioxide	0.000E+00	0.000E+00	0.000E+00
Sulphuric acid	1.129E-04	1.129E-04	2.300E-10
Total Dissolved Solids	2.496E+01	2.496E+01	0.000E+00
Unspecified Iron Oxides	5.739E-09	5.739E-09	0.000E+00
Unspecified Oil	2.033E-08	2.033E-08	0.000E+00
Unspecified Organic Chlorine compounds	4.608E-11	4.608E-11	0.000E+00
Unspecified Salt	1.843E-07	1.843E-07	0.000E+00
Unspecified Solids (Suspended)	7.157E-07	7.157E-07	0.000E+00
Organic emissions to fresh water	1.472E-01	1.472E-01	2.283E-07
Halogenated organic emissions to fresh water	6.693E-07	6.693E-07	1.272E-12
1,2-Dibromoethane	4.442E-11	4.442E-11	6.170E-17
Chlorinated hydrocarbons (unspecified)	2.772E-09	2.772E-09	7.144E-19
Chloromethane (methyl chloride)	6.335E-08	6.335E-08	1.271E-12
Dichloroethane (ethylene dichloride)	1.054E-07	1.054E-07	0.000E+00
Dichloropropane	9.763E-14	9.763E-14	1.520E-19
Polychlorinated dibenzo-p-dioxins (2,3,7,8 - TCDD)	3.430E-10	3.430E-10	3.383E-24
Vinyl chloride (VCM; chloroethene)	4.974E-07	4.974E-07	1.174E-16
Hydrocarbons to fresh water	1.464E-01	1.464E-01	3.595E-08
Acenaphthene	1.473E-08	1.472E-08	1.727E-12

Acenaphthylene	6.096E-09	6.096E-09	7.415E-13
Acetic acid	5.374E-05	5.374E-05	7.661E-11
Acrylonitrile	7.139E-09	7.139E-09	1.112E-14
Anthracene	2.361E-08	2.361E-08	3.212E-12
Aromatic hydrocarbons (unspecified)	6.983E-06	6.982E-06	6.250E-10
Benzene	2.927E-05	2.927E-05	3.962E-09
Benzo{a}anthracene	1.911E-09	1.910E-09	1.989E-13
Benzofluoranthene	7.978E-10	7.978E-10	2.638E-14
Chrysene	8.108E-09	8.107E-09	7.328E-13
Cresol (methyl phenol)	1.071E-08	1.071E-08	4.346E-13
Ethyl benzene	1.642E-06	1.641E-06	2.164E-10
Fluoranthene	2.603E-09	2.602E-09	2.260E-13
Hexane (isomers)	1.176E-09	1.176E-09	4.746E-14
Hydrocarbons (unspecified)	7.880E-02	7.880E-02	6.756E-11
Methanol	2.851E-02	2.851E-02	1.220E-09
Oil (unspecified)	3.887E-02	3.887E-02	2.235E-08
Phenol (hydroxy benzene)	3.358E-05	3.357E-05	4.020E-09
Polycyclic aromatic hydrocarbons (PAH, unspec.)	2.907E-05	2.907E-05	7.514E-11
Toluene (methyl benzene)	1.743E-05	1.743E-05	2.412E-09
Xylene (isomers; dimethyl benzene)	9.656E-06	9.655E-06	9.122E-10
Carbon, organically bound	7.816E-04	7.814E-04	1.922E-07
Naphthalene	8.874E-07	8.873E-07	1.243E-10
N-unspecified (N)	1.591E-08	1.591E-08	0.000E+00
Organic chlorine compounds (unspecified)	3.278E-08	3.278E-08	5.087E-16
Organic compounds (dissolved)	1.032E-06	1.032E-06	6.525E-16
Organic compounds (unspecified)	8.215E-06	8.215E-06	4.752E-26
Unspecified wastewater	1.203E-05	1.203E-05	0.000E+00
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	4.843E+00	4.843E+00	4.922E-05
Metals (unspecified)	2.200E-06	2.200E-06	3.732E-14
Silicon dioxide (silica)	8.651E-08	8.651E-08	0.000E+00
Soil loss by erosion into water	3.635E-07	3.635E-07	1.648E-11
Solids (suspended)	4.843E+00	4.843E+00	4.922E-05

Suspended solids, unspecified	2.534E-04	2.534E-04	0.000E+00
Unspecified Oxides	4.771E-09	4.771E-09	0.000E+00
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
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	0.000E+00	0.000E+00	0.000E+00
Radionuclide	0.000E+00	0.000E+00	0.000E+00
Sulfite	0.000E+00	0.000E+00	0.000E+00
Unspecified Solids (Dissolved)	1.379E-06	1.379E-06	0.000E+00
Uranium (total)	2.968E-05	2.968E-05	0.000E+00
Emissions to sea water	2.180E+00	2.180E+00	2.765E-04
Analytical measures to sea water	6.091E-03	6.089E-03	1.733E-06
Adsorbable organic halogen compounds (AOX)	3.271E-10	3.270E-10	1.195E-13
Biological oxygen demand (BOD)	3.609E-04	3.607E-04	1.318E-07
Chemical oxygen demand (COD)	5.369E-03	5.367E-03	1.470E-06
Total organic bounded carbon	3.609E-04	3.607E-04	1.318E-07
Heavy metals to sea water	1.342E-02	1.342E-02	4.046E-07
Arsenic (+V)	9.474E-06	9.472E-06	1.986E-09
Cadmium (+II)	5.522E-06	5.521E-06	1.011E-09

Chromium (unspecified)	1.500E-05	1.499E-05	3.053E-09
Cobalt	7.859E-06	7.859E-06	1.899E-10
Copper (+II)	3.353E-05	3.352E-05	1.013E-08
Iron	1.453E-04	1.453E-04	2.140E-08
Lead (+II)	9.197E-06	9.194E-06	2.997E-09
Manganese (+II)	1.490E-05	1.490E-05	2.119E-09
Mercury (+II)	1.663E-07	1.663E-07	4.305E-11
Molybdenum	1.209E-02	1.209E-02	1.483E-10
Nickel (+II)	1.338E-05	1.338E-05	3.037E-09
Silver	1.125E-06	1.125E-06	4.399E-10
Strontium	9.099E-04	9.095E-04	3.544E-07
Tin (+IV)	1.348E-06	1.348E-06	5.269E-10
Titanium	1.373E-07	1.373E-07	5.367E-11
Vanadium (+III)	5.561E-06	5.561E-06	1.974E-10
Zinc (+II)	1.550E-04	1.550E-04	2.866E-09
Inorganic emissions to sea water	1.872E+00	1.872E+00	1.693E-04
Aluminum (+III)	4.420E-06	4.419E-06	1.728E-09
Ammonia	1.314E-04	1.313E-04	5.135E-08
Barium	3.645E-04	3.645E-04	3.148E-08
Beryllium	4.281E-07	4.281E-07	2.661E-12
Boron	7.148E-05	7.145E-05	2.794E-08
Calcium (+II)	7.806E-03	7.803E-03	3.051E-06
Carbonate	2.292E-02	2.292E-02	1.980E-06
Chloride	1.818E+00	1.818E+00	1.596E-04
Magnesium	1.947E-03	1.946E-03	7.595E-07
Nitrate	2.972E-05	2.972E-05	2.567E-09
Sodium (+I)	7.206E-03	7.204E-03	2.632E-06
Sulphate	9.713E-03	9.712E-03	8.375E-07
Sulphide	4.162E-03	4.162E-03	3.605E-07
Sulphur	3.825E-05	3.823E-05	1.495E-08
Organic emissions to sea water	1.170E-03	1.170E-03	1.042E-07
Hydrocarbons to sea water	1.157E-03	1.156E-03	1.037E-07
Acenaphthene	4.192E-07	4.192E-07	1.030E-11
Acenaphthylene	1.598E-07	1.598E-07	4.042E-12
Acetic acid	1.105E-06	1.105E-06	5.813E-12
Anthracene	1.123E-07	1.123E-07	6.455E-12
Aromatic hydrocarbons (unspecified)	3.609E-06	3.607E-06	1.318E-09
Benzene	9.369E-05	9.368E-05	1.251E-08

Benzo{a}anthracene	9.383E-08	9.383E-08	2.054E-12
Benzofluoranthene	1.040E-07	1.040E-07	2.014E-12
Chrysene	5.296E-07	5.296E-07	1.108E-11
Cresol (methyl phenol)	9.907E-07	9.903E-07	3.872E-10
Ethyl benzene	8.636E-06	8.636E-06	4.905E-10
Fluoranthene	1.094E-07	1.094E-07	2.384E-12
Hexane (isomers)	1.082E-07	1.081E-07	4.228E-11
Oil (unspecified)	7.937E-04	7.936E-04	7.039E-08
Phenol (hydroxy benzene)	1.554E-04	1.554E-04	7.734E-09
Toluene (methyl benzene)	5.805E-05	5.805E-05	8.993E-09
Xylene (isomers; dimethyl benzene)	3.977E-05	3.977E-05	1.798E-09
Naphthalene	1.363E-05	1.363E-05	4.826E-10
Particles to sea water	2.872E-01	2.871E-01	1.049E-04
Solids (suspended)	2.872E-01	2.871E-01	1.049E-04
Emissions to industrial soil	1.431E+04	1.431E+04	5.554E-07
Heavy metals to industrial soil	1.431E+04	1.431E+04	1.464E-07
Antimony	1.161E-15	1.161E-15	0.000E+00
Arsenic (+V)	7.930E+00	7.930E+00	1.593E-13
Cadmium (+II)	8.341E-08	8.341E-08	1.633E-12
Chromium (+III)	2.357E-10	2.357E-10	1.668E-14
Chromium (+VI)	4.205E-15	4.205E-15	0.000E+00
Chromium (unspecified)	8.372E-06	8.372E-06	3.799E-10
Cobalt	1.465E-07	1.464E-07	6.774E-12
Copper (+II)	8.370E-08	8.369E-08	3.631E-12
Iron	1.419E+04	1.419E+04	5.334E-10
Lead (+II)	5.671E+01	5.671E+01	1.197E-13
Manganese (+II)	1.951E-06	1.951E-06	7.969E-11
Mercury (+II)	1.467E-01	1.467E-01	7.285E-15
Nickel (+II)	3.165E-06	3.165E-06	1.063E-10
Selenium	9.421E-01	9.421E-01	0.000E+00
Strontium	2.736E-03	2.736E-03	1.452E-07
Thallium	6.857E+00	6.857E+00	0.000E+00
Vanadium (+III)	4.329E+01	4.329E+01	0.000E+00
Zinc (+II)	9.473E-07	9.473E-07	4.016E-11
Inorganic emissions to industrial soil	8.475E-03	8.475E-03	4.087E-07
Aluminum (+III)	9.564E-06	9.563E-06	4.073E-10
Ammonia	4.318E-03	4.318E-03	2.235E-07
Bromide	1.255E-06	1.255E-06	5.805E-11

Calcium (+II)	1.074E-04	1.074E-04	2.568E-10
Chloride	1.471E-03	1.470E-03	6.774E-08
Chlorine	9.812E-13	9.812E-13	0.000E+00
Fluoride	4.184E-05	4.184E-05	1.935E-09
Magnesium (+III)	1.486E-05	1.486E-05	3.623E-11
Phosphorus	4.451E-04	4.450E-04	2.362E-08
Potassium (+I)	1.079E-03	1.079E-03	4.534E-08
Sodium (+I)	9.395E-06	9.395E-06	2.234E-11
Sulphate	1.397E-04	1.397E-04	6.535E-09
Sulphide	8.382E-04	8.381E-04	3.921E-08
Organic emissions to industrial soil	7.333E-05	7.333E-05	3.379E-10
Oil (unspecified)	7.333E-05	7.333E-05	3.379E-10
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	7.490E-01	7.490E-01	0.000E+00
Radionuclide	0.000E+00	0.000E+00	0.000E+00

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None.

Section III: Document Control Information

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