



# NETL Life Cycle Inventory Data

## Process Documentation File

**Process Name:** Marine Coal Terminal  
**Reference Flow:** 1 kg of Coal  
**Brief Description:** The air emissions from processing coal at a marine bulk terminal

### Section I: Meta Data

**Geographical Coverage:** N/A **Region:** N/A  
**Year Data Best Represents:** 2026  
**Process Type:** Transport Process (TP)  
**Process Scope:** Gate-to-Gate Process (GG)  
**Allocation Applied:** No  
**Completeness:** All 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  Other  
Releases to Water:  Inorganic  Organic Emissions  Other  
Water Usage:  Water Consumption  Water Demand (throughput)  
Releases to Soil:  Inorganic Releases  Organic Releases  Other

#### Adjustable Process Parameters:

CO<sub>2</sub>e *[kg/kg] kilograms of CO<sub>2</sub>e per kilogram of coal processed*  
PM<sub>10</sub> *[kg/kg] kilograms of PM<sub>10</sub> per kilogram of coal processed*  
PM<sub>2.5</sub> *[kg/kg] kilograms of PM<sub>2.5</sub> per kilogram of coal processed*  
PM<sub>25to10</sub> *[kg/kg] kilograms of PM<sub>2.5</sub> to PM<sub>10</sub> per kilogram of coal processed*

SO <sub>2</sub>	<i>[kg/kg] kilograms of SO<sub>2</sub> per kilogram of coal processed</i>
CO	<i>[kg/kg] kilograms of CO per kilogram of coal processed</i>
NO <sub>2</sub>	<i>[kg/kg] kilograms of NO<sub>2</sub> per kilogram of coal processed</i>

**Tracked Input Flows:**

Coal [Intermediate Product] *[Resource]*

**Tracked Output Flows:**

Coal [Intermediate Product] *Reference flow*

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**Section II: Process Description**

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**Associated Documentation**

This unit process is composed of this document and the data sheet (DS) *DS\_Stage2\_RMT\_Marine\_Coal\_Terminal\_2015.01.xlsx*, which provides additional details regarding relevant calculations, data quality, and references.

**Goal and Scope**

This unit process provides a summary of relevant input and output flows associated with the processing of coal at a marine bulk terminal. The input to this process is coal. The outputs are coal and air emissions. The reference flow of this unit process is: 1 kg of coal.

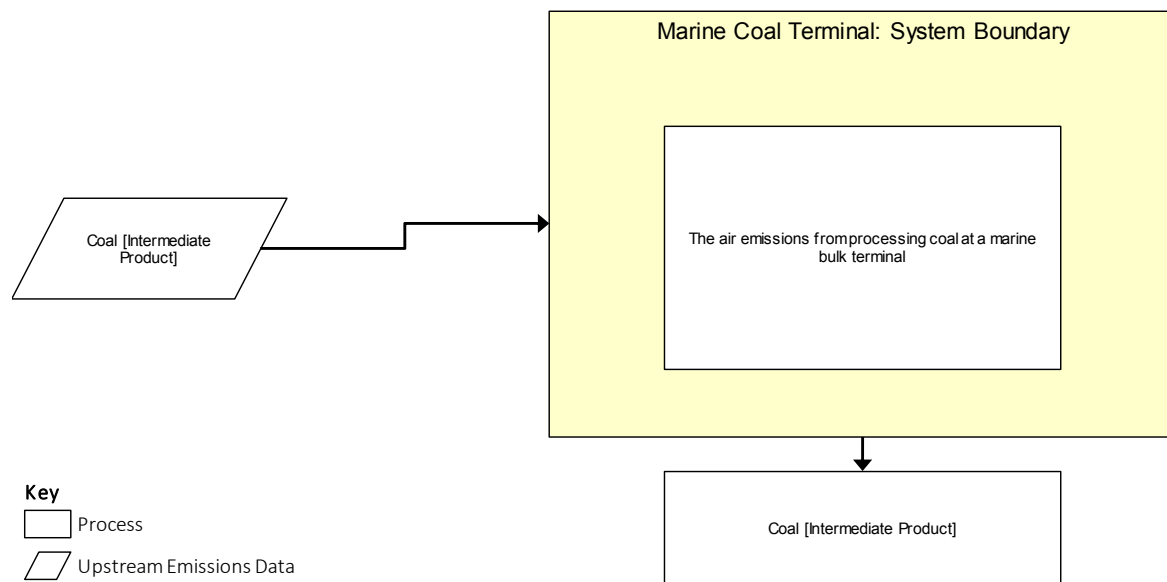
**Boundary and Description**

The data for this unit process is based on projected emissions for a proposed facility in the Pacific Northwest. The proposed project is a "...deep-water, multimodal marine Terminal for exporting dry bulk commodities..." The deep-draft wharf will accommodate Panamax and Capesize vessels. It is expected that the terminal will mostly export coal, with 48 of the 54 million metric tonne capacity each year being dedicated to coal exports. The remaining commodities to be exported include potash, agricultural products, calcined coke, mineral products, and other commodities. Commodities will

arrive to the terminal by rail transport. The export destination of these commodities is intended to be Asia (ENVIRON International Corporation 2014).

Included in this unit process is the activity on the rail spur from the main rail line, the processing of commodities within the terminal, and ocean vessel transit and hoteling within the terminal. The facility construction emissions modeled in this unit process include CO<sub>2</sub>e emissions from the use of diesel equipment on land and over water and the use of in-water bubble curtains. Facility operation emissions modeled in this unit process include CO<sub>2</sub>e, PM<sub>10</sub>, PM<sub>2.5</sub>, SO<sub>2</sub>, CO, NO<sub>2</sub> emissions from onsite diesel equipment use, rail transport onsite, rail transport on the rail spur, ocean vessel transit, and ocean vessel hoteling.

**Figure 1: Unit Process Scope and Boundary**



**Table 2: Unit Process Input and Output Flows**

Flow Name	Value	Units (Per Reference Flow)
<b>Inputs</b>		
<b>Coal [Intermediate Product]</b>	<b>1.00</b>	<b>kg/kg</b>
<b>Outputs</b>		
<b>Coal [Intermediate Product]</b>	<b>1.00</b>	<b>kg/kg</b>
Carbon dioxide [Inorganic emissions to air]	9.22E-04	kg/kg
Dust (PM2.5 - PM10) [Particles to air]	9.52E-09	kg/kg
Dust (PM2.5) [Particles to air]	2.22E-07	kg/kg
Sulphur dioxide [Inorganic emissions to air]	2.32E-07	kg/kg
Carbon monoxide [Inorganic emissions to air]	2.17E-06	kg/kg
Nitrogen oxides [Inorganic emissions to air]	1.02E-05	kg/kg

\* **Bold face** clarifies that the value shown *does not* include upstream environmental flows.

**Embedded Unit Processes**

None.

**References**

ENVIRON International Corporation  
2014

ENVIRON International Corporation (2014).  
Gateway Pacific Terminal Air Quality Technical  
Report Revised Site Layout.



**Section III: Document Control Information**

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**Date Created:** May 15, 2015

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Original/no revisions

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**Section IV: Disclaimer**

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