

Beginning in 2011 with the USEPA project

Final Technical Report to USEPA

Contract EP-11-C-000197: |

Emergy research support for supply chains

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We started compiling emergy
evaluations using data from EcoInvent...

...and the open-source life cycle assessment software OpenLCA



The open source software for sustainability assessment.
For modeling the life cycle of things.
Licenced under the Mozilla Public Licence 2.0.
Created and maintained since 2006 by GreenDelta, Berlin
Version 1.7.2 (Mac OS x86_64)

[New in version 1.7 >](#)

[Getting started >](#)

[Manuals and case studies >](#)

Data are downloaded from Open LCA...

Directly into Excel spreadsheet.

The screenshot shows the openLCA 1.7.2 interface. The left sidebar contains a navigation tree with categories like 'Projects', 'Product systems', 'Processes', 'Flows', 'Indicators and parameters', and 'Background data'. The main window displays a table titled 'Inputs/Outputs: uranium natural, in yellowcake, at mill plant'. The table has columns for Flow, Category, Amount, Unit, Costs/Reven, Uncertainty, Avoided was, Provider, Data quality, and Descriptor. A red oval highlights the 'Amount' and 'Unit' columns.

Flow	Category	Amount	Unit	Costs/Reven	Uncertainty	Avoided was	Provider	Data quality	Descriptor
F _e ammonia, liquid, at regiona...	Ecoinvent flows	0.9	kg		lognormal:...				
F _e ammonium sulphate, as N,...	Ecoinvent flows	0.106	kg		lognormal:...				
F _e chemicals inorganic, at pla...	Ecoinvent flows	0.26	kg		lognormal:...				
F _e chemicals organic, at plant...	Ecoinvent flows	0.315	kg		lognormal:...				
F _e diesel, burned in diesel-el...	Ecoinvent flows	176.0	MJ		lognormal:...				
F _e ethylenediamine, at plant - ...	Ecoinvent flows	0.012	kg		lognormal:...				
F _e heavy fuel oil, burned in in...	Ecoinvent flows	264.0	MJ		lognormal:...				
F _e Occupation, dump site	Resource/land	1.96000000...	m2*a		lognormal:...				
F _e soda, powder, at plant - RER	Ecoinvent flows	2.5	kg		lognormal:...				
F _e sodium chlorate, powder, a...	Ecoinvent flows	1.0	kg		lognormal:...				
F _e sodium chloride, brine solu...	Ecoinvent flows	2.5	kg		lognormal:...				
F _e sodium hydroxide, 50% in...	Ecoinvent flows	0.026	kg		lognormal:...				
F _e sulphuric acid, liquid, at pl...	Ecoinvent flows	35.0	kg		lognormal:...				
F _e tailings, uranium milling - GLO	Ecoinvent flows	0.25	m3		lognormal:...				
F _e Transformation, from unkn...	Resource/land	0.018	m2		lognormal:...				
F _e Transformation, to dump site	Resource/land	0.018	m2		lognormal:...				
F _e transport, freight, rail - RER	Ecoinvent flows	32.0	t*km		lognormal:...				
F _e transport, lorry >16t, fleet...	Ecoinvent flows	6.30000000...	t*km		lognormal:...				
F _e uranium mill - US	Ecoinvent flows	1.35E-7	p		lognormal:...				
F _e uranium natural, at mine - ...	Ecoinvent flows	1.05	kg		lognormal:...				
F _e Water, unspecified natural...	resource/in water	1.0	m3		lognormal:...				

UEVs previously computed are added to the table

Uranium yellow cake production				
Item	Units	Quantity	UEV	Energy (E12 sej)
ammonia, liquid, at regional stor	kg	0.9	4.90E+12	4.41
ammonium sulphate, as N, at re	kg	0.106	6.80E+12	0.72
chemicals inorganic, at plant	kg	0.26	1.00E+12	0.26
chemicals organic, at plant	kg	0.315	1.00E+12	0.32
diesel, burned in diesel-electric g	MJ	176	1.70E+11	29.92
heavy fuel oil, burned in industr	MJ	264	1.73E+11	45.67
sodium bicarbonate	kg	2.5	1.00E+12	2.50
sodium chlorate, powder, at pla	kg	1	1.00E+12	1.00
sodium chloride, brine solution,	kg	2.5	1.00E+12	2.50
sodium hydroxide, 50% in H2C	kg	0.026	1.00E+12	0.03
sulphuric acid, liquid, at plant	kg	35	1.45E+12	50.75
transport, freight, rail	t*km	32	1.00E+11	3.20
transport, lorry >16t, fleet avera	t*km	6.3	2.50E+11	1.58
uranium natural, at mine	kg	1.05	1.81E+13	19.00
Water, unspecified natural origin	m3	1	2.23E+11	0.22
1kg yellow cake			1.62E+14	162.07

The sum of emergy equals the emergy of the product

