

Category		Title
NFR:	2.A.7.a	Quarrying and mining of minerals other than coal
SNAP:	040616 040623	Extraction of mineral ores Quarrying
ISIC:	1410	Quarrying of stone, sand and clay
Version	Guidebook 2009	

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1 Overview

Emissions from non-coal quarrying and mining are not significant, since the contribution to the total national emissions is thought to be less than 1 % of the national emissions of any pollutant. Although significant at a local level, at a national level emissions are comparatively small and only relevant for the relatively coarse fractions of particulate matter.

The present version of the Guidebook does provide default emission factors for this source category, based on referenced or non-referenced literature values or, if no literature is available, expert judgement.

The present chapter provides a very simple process description and a Tier 1 approach to estimate emissions from this source category.

2 Description of sources

2.1 Process description

This chapter discusses the quarrying and mining of minerals other than coal, for instance the mining of bauxite, copper ore, iron ore, manganese ore or zinc ore. This is illustrated in the simplified process scheme below.

This chapter does not include emissions from the combustion of fuels in the plant or transport machinery.

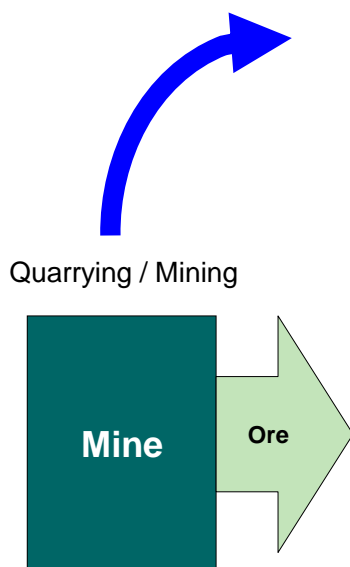


Figure 2.1 Simplified process scheme for source category 2.A.7.a Quarrying and mining of minerals other than coal

2.2 Techniques

Standard techniques are assumed for this source including blasting transportation and crushing of materials.

2.3 Emissions and controls

Quarrying and mining of minerals results in emissions of particulates. Controls will include wetting and covering of processes, depending on the materials.

3 Methods

3.1 Choice of method

Since only a Tier 1 default approach for this chapter is presented, this section and the decision tree are omitted. More detailed information about the emissions from quarrying and mining may be found in AP-42 (US EPA).

3.2 Tier 1 default approach

The present subsection provides default emission factors for this source category. Since it is only a minor source of emissions, only Tier 1 default emission factors are provided.

3.2.1 Algorithm

The Tier 1 approach uses the general equation:

$$E_{\text{pollutant}} = AR_{\text{production}} \times EF_{\text{pollutant}} \quad (1)$$

Where:

$E_{\text{pollutant}}$	=	the emission of the specified pollutant
$AR_{\text{production}}$	=	the activity rate for the quarrying/mining
$EF_{\text{pollutant}}$	=	the emission factor for this pollutant

The Tier 1 emission factors assume an averaged or typical technology and abatement implementation in the country and integrate all sub-processes.

3.2.2 Default emission factors

Default emission factors for particulate emission from the quarrying and mining of minerals are given in Table 3.1. The emission factors are average factors taken from the Coordinated European Particulate Matter Emission Inventory Program (CEPMEIP) (Visschedijk et al., 2004).

Table 3.1 Tier 1 emission factors for source category 2.A.7.a Quarrying and mining of minerals other than coal

Tier 1 default emission factors					
	Code	Name			
NFR Source Category	2.A.7.a	Quarrying and mining of minerals other than coal			
Fuel	NA				
Not applicable	NOx, CO, NMVOC, SOx, NH3, Pb, Cd, Hg, As, Cr, Cu, Ni, Se, Zn, Aldrin, Chlordane, Chlordecone, Dieldrin, Endrin, Heptachlor, Heptabromo-biphenyl, Mirex, Toxaphene, HCH, DDT, PCB, PCDD/F, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Indeno(1,2,3-cd)pyrene, Total 4 PAHs, HCB, PCP, SCCP				
Not estimated					
Pollutant	Value	Unit	95% confidence interval		Reference
			Lower	Upper	
TSP	0.07	g/Mg mineral	0.005	1	Visschedijk et al. (2004)
PM10	0.04	g/Mg mineral	0.005	0.25	Visschedijk et al. (2004)
PM2.5	0.004	g/Mg mineral	0.00075	0.025	Visschedijk et al. (2004)

3.2.3 Activity data

Information on production statistics (for various source categories) is typically available from national statistics or United Nations statistical yearbooks.

3.3 Tier 2 technology-specific approach

Not available for this source.

3.4 Tier 3 emission modelling and use of facility data

Not available for this source.

4 Data quality

No specific issues for this source category.

5 Glossary

AR _{production}	the activity rate for the quarrying/mining
E _{pollutant}	the emission of the specified pollutant
EF _{pollutant}	the emission factor for this pollutant

6 References

Visschedijk, A.J.H., Pacyna, J., Pulles, T., Zandveld, P. and Denier van der Gon, H., 2004. 'Coordinated European Particulate Matter Emission Inventory Program (CEPMEIP)'. In: Dilara, P. et al. (eds.), *Proceedings of the PM emission inventories scientific workshop, Lago Maggiore, Italy, 18 October 2004*. EUR 21302 EN, JRC, pp. 163–174.

7 Point of enquiry

Enquiries concerning this chapter should be directed to the relevant leader(s) of the Task Force on Emission Inventories and Projection's expert panel on combustion and industry. Please refer to the TFEIP website (www.tfeip-secretariat.org/) for the contact details of the current expert panel leaders.