2.A.5.b - Construction and Demolition

Short description

Method	AD	EF	Key Category
T1	NS	CS	**L&T:** TSP, PM_{10}

T = key source by Trend **L** = key source by Level

Methods	
D	Default
RA	Reference Approach
T1	Tier 1 / Simple Methodology *
T2	Tier 2*
T3	Tier 3 / Detailed Methodology *
C	CORINAIR
CS	Country Specific
M	Model
* as described in the EMEP/CORINAIR Emission Inventory Guidebook - 2007, in the group specific chapters.	

AD - Data Source for Activity Data	
NS	National Statistics
RS	Regional Statistics
IS	International Statistics
PS	Plant Specific data
AS	Associations, business organisations
Q	specific questionnaires, surveys

EF - Emission Factors	
D	Default (EMEP Guidebook)
C	Confidential
CS	Country Specific
PS	Plant Specific data

Information about the key source relevance can be found in 2.A - Mineral Industry. For particulate emissions, Construction is the main emissions source in the Mineral industries.

Methodology

Since the last update of the UNECE Guidebook we use the Tier 1 method to estimate the national emissions of particulate matters. The approach for uncontrolled fugitive emissions for this source category was adapted for national circumstances within a research Project (Umweltbundesamt, 2016) [1)], partly considered exiting control techniques. As a result, the information of the statistics is combined with modified default emission factors for TSP and PM.

Activity data

Activity data are determined taking into account figures for various construction activities. Data is based on production statistics (national statistics). According to the method used, figures of area of land affected by construction activities per building were concluded from statistical data and multiplied with emission factors, as explained below. The common uncertainty of 3% for national statistics could be increased as a result of this calculation, but the effect is not estimated at the moment.

Emission factors

The emission factors used are results of Adaptation of UNECE-Defaults (EEA, 2016) [2)], see chapter NFR 2.A.5.b for different

kind of buildings.

Table 1: Overview of apllied emission factors

Kind of building	Pollutant	EF value	Unit	EF trend
single and two family houses	TSP	0.0638	kg/m²*y	constant
single and two family houses	PM_{10}	0.0191	kg/m²*y	constant
single and two family houses	$PM_{2.5}$	0.0019	kg/m²*y	constant
apartment buildings	TSP	0.329	kg/m²*y	constant
apartment buildings	PM_{10}	0.099	kg/m²*y	constant
apartment buildings	$PM_{2.5}$	0.0099	kg/m²*y	constant
non-residential	TSP	0.631	kg/m²*y	constant
non-residential	PM_{10}	0.189	kg/m²*y	constant
non-residential	$PM_{2.5}$	0.0189	kg/m²*y	constant
roads	TSP	1,674	kg/m²*y	constant
roads	PM_{10}	502	kg/m²*y	constant
roads	$PM_{2.5}$	50.2	kg/m²*y	constant

Several further assumptions were necessary to use the formula of the Guidebook:

EM = EF*B*f*m

The EF is adapted with Moisture Level Correction factor and Silt Content Correction factor in all cases, both 0.20 and 2.22. The assumption about the duration of the construction activity uses the Default values.

Type of building	Estimated duration (year)
Construction of houses (single and two family)	0.5 (6 months)
Construction of apartments (all types)	0.75 (9 months)
Non-residential construction	0.83 (10 months)
Road construction	1 (12 months)

Source (EEA, 2016)[3)]

AD is a result of multiplying B the number of houses constructed and f the conversion factor.

Trends in emissions

All trends in emissions as product of EF and AD correspond to trends of construction activities.

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Emission trends in NFR 2.A.5.b

Recalculations

With **activity data** and **emission factors** remaining unrevised, no recalculations have been carried out compared to last year's submission.

For pollutant-specific information on recalculated emission estimates for Base Year and 2018, please see the pollutant specific recalculation tables following chapter 8.1 - Recalculations.

Planned improvements

At the moment, no category-specific improvements are planned.

FAQs

Where can I find emissions estimation of demolition activities? - Demolishing without any significant new construction is not covered and there are no other emission factors available for demolition activities only. Nevertheless you can find Information about emissions from 5.E.2 - Other Waste: Building Fires.

Why do German EFs differ from EEA defaults? - It has to do with the default 50% reduction for non-residential buildings and roads (as a result of wetting unpaved temporary roads) that is assumed in the calculations for Germany. This is also already accounted for in the EPA emission factors. It is a result of a control measure that is nearly always taken but in principle optional. In the Guidebook a 50% reduction is advised.

[1)] Umweltbundesamt, 2016: Development of Methods for the Generation of Emission Data for Air Pollutants from Building Activity and Construction Zones, Dessau-Roßlau, 2016 FILE?
[2), 3)] EEA, 2016: EEA Report No 21/2016 EMEP EEA air pollutant emission inventory guidebook 2016, Copenhagen, 2016; https://www.eea.europa.eu/ds_resolveuid/EJ6RT9P2Y3