2.A.3 - Glass Production

Short description

Category Code	Method					AD				EF				
2.A.3	T2					AS				CS				
Key Category	**SO₂**	**NOₓ**	**NH₃**	**NMVOC**	**CO**	**BC**	**Pb**	**Hg**	**Cd**	**Diox**	**PAH**	**HCB**	**TSP**	**PM₁₀**	**PM₂ ₅**
2.A.3	L/-	-/-	-/-	-/-	-	-	-/-	-	-/-	-	-	-	-/-	-/-	-/-

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

Germany's glass industry produces a wide range of different glass types that differ in their chemical composition. Germany's glass sector comprises the following sub-sectors: container glass, flat glass, domestic glass, special glass and mineral fibres (glass and stone wool). The largest production quantities are found in the sectors of container glass and flat glass. Further processing and treatment of glass and glass objects are not considered. Information about the key source relevance can be found in 2.A - Mineral Industry.

Methodology

The emissions are calculated via a higher Tier method resembling a Tier 2 method, as the activity rates are tied to specific emission factors for different glass types.

Activity data

The production figures are taken from the regularly appearing annual reports of the Federal Association of the German Glass Industry (Bundesverband Glasindustrie; BV Glas). "Production" refers to the amount of glass produced, which is considered to be equivalent to the amount of glass melted down.

Emission factors

The procedure used to determine emission factors for the various glass types involved and the pertinent emissions is described in detail in reports of research projects (Report-No. 001264, search "UBA-FB 001264" in (https://doku.uba.de ⇒ OPAC ⇒ Signatur). The emission factors were calculated for the various industry sectors. The factors vary annually in keeping with industry monitoring, not only as steady trends, but as time ranges. Ranges below are given as averages over all glass types for main pollutants, but as averages over time for heavy metals:

Table 1: Overview of applied emission factors

Pollutant	Products	EF	Unit	Current trend
NO_x	all glass types	1.0-3.4	kg/t	constant
SO_2	all glass types	0.39-1.9	kg/t	constant
NMVOC	all glass types	0.96	kg/t	constant
NH_3	two glass types	0.03/0.7	kg/t	constant
TSP	all glass types	0.02-0.04	kg/t	constant
PM_{10}	all glass types	0.01-0.03	kg/t	constant
$PM_{2.5}$	all glass types	0.01-0.02	kg/t	constant
As	container glass	0.079	g/t	constant
Pb	container glass	0.41	g/t	constant
Cd	container glass	0.04	g/t	constant
Cr	container glass	0.04	g/t	constant
Cu	container glass	0.10	g/t	constant
Ni	container glass	0.014	g/t	constant
Se	container glass	1.4	g/t	constant

Trends in emissions

Trends in emissions correspond to trends of emission factors and of activity data. The resulting trends are not constant, but a complex result of different EF for various glass types. So emissions of SO_2 could rising due to increased production Level of a relevant product.

trends of emissions of glass industry

Emissions by pollutant / Emissionen nach Schadstoff
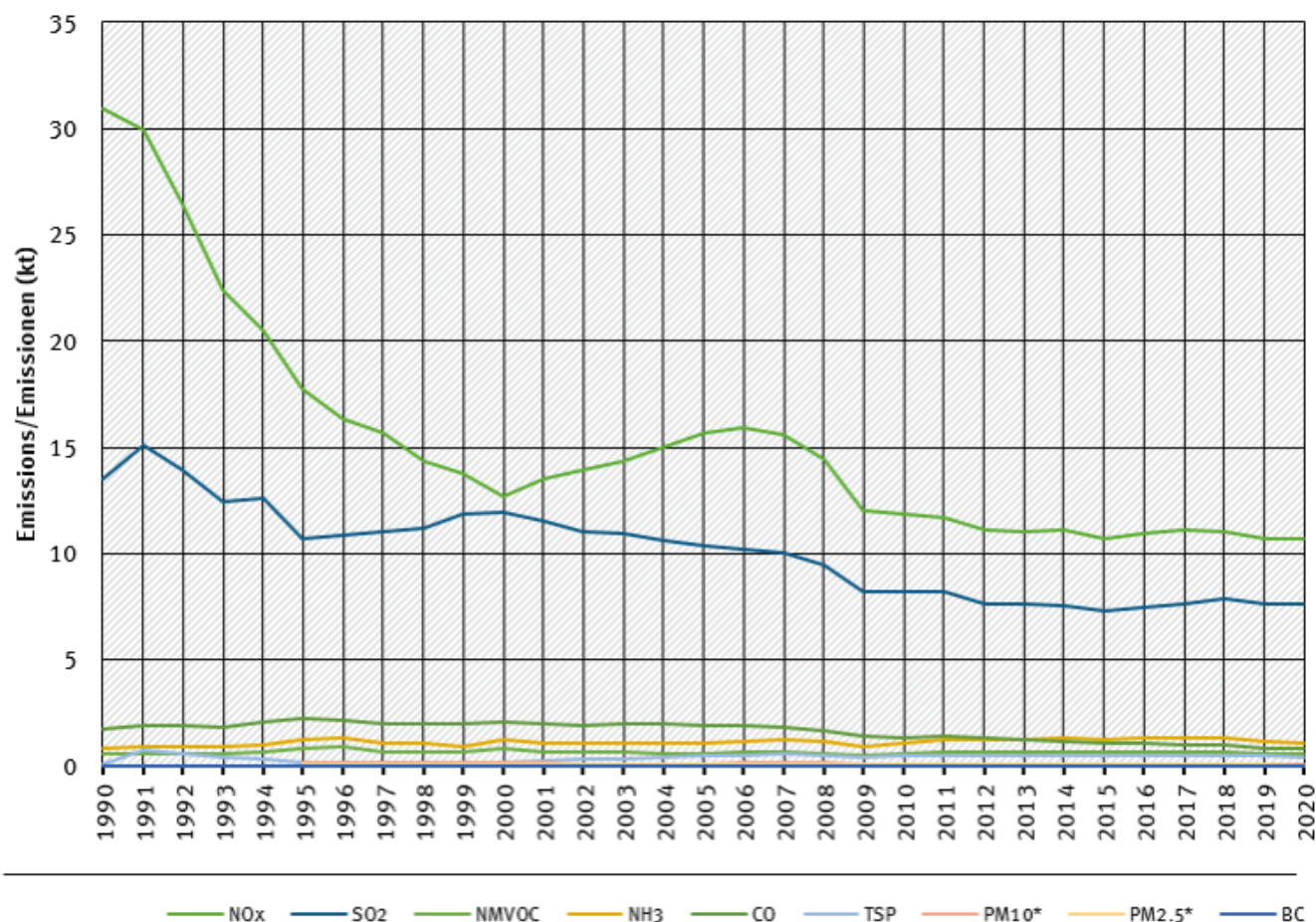
* Base Year for PM = 1995 / Basisjahr für Feinstäube (PM) ist 1995

Source: German Emission Inventory (03.12.2021)

Emission trends in NFR 2.A.3

Recalculations

Recalculations were necessary due to updated activity data for the last reported year.

> 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

For purposes of updating the EF project has started in 2019, results from 2020 [1] are planned to be use for Submission 2022.

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[1] ReFoPlan FKZ – 3719 52 1010: „Überarbeitung der Emissionsfaktoren für Luftschadstoffe in den Branchen Zementklinkerproduktion und Glasherstellung"