

2.G(b) - Other Product use: Tobacco

Short description

In this sub-category of 2.G(b) - Other product use: Tobacco Germany reports NO_x, NH₃, NMVOC, TSP, PM₁₀, PM_{2.5}, Cd, Co, Cu, Ni, Zn, Benzo(a)pyrene (B[a]P), Benzo(b)fluoranthene (B[b]F), Benzo(k)fluoranthene (B[k]F), Indeno(1,2,3-cd)pyrene (I[1,2,3-c,d]P), PAH 1-4 and PCDD/F emissions from the smoking of cigarettes and cigars.

NFR-Code	Name of Category	Method	AD	EF
2.G(b)	Other Product use: Tobacco	T2	NS	CS/D

Method

Activity data

Statistical data from the tax registration of sold tobacco ¹⁾, cigarettes and cigars are used as **activity data**.

Emission factors

Here, as study was made and published in October 2016 “Entwicklung von Methoden zur Berechnung von Emissionen von Luftschadstoffen aus der Verwendung von Holzkohle, Tabak, Feuerwerk und Kerzen sowie aus dem Entfachen von Brauchtumsfeuern” from Nicola Toenges-Schuller et al., AVISO GmbH, for the Umweltbundesamt Germany. Based on this study, most of the EFs are an average value from different studys.

Table 1: Emission factors applied

	Value	Unit	Data source
NO_x	1.8	kg/t tobacco	EMEP/EEA 2019 ²⁾
NMVOC	9.56	kg/t tobacco	average value
NH₃	5.33	kg/t tobacco	average value
CO	112.51	kg/t tobacco	average value
TSP/PM₁₀/PM_{2.5}	18.85	kg/t tobacco	average value
BC	0.074	kg/t tobacco	average value
Cd	0.0054	kg/t tobacco	EMEP/EEA 2019
Cu	5.4	g/t tobacco	EMEP/EEA 2019
Ni	2.7	g/t tobacco	EMEP/EEA 2019
Zn	2.16	g/t tobacco	average value
PCDD/F	0.1	µg/t tobacco	EMEP/EEA 2019
B[a]P	0.21	g/t tobacco	average value
B[b]F	0.26	g/t tobacco	average value

B[k]F	0.26	g/t tobacco	average value
I[1,2,3-c,d]P	0.42	g/t tobacco	average value

Recalculations

Until submission 2020, for the calculation of the activity data, the production, import and export of cigarettes, cigars and tobacco products were used. But because of double counting of tobacco amounts the activity data were overestimated. As of submission 2021, the sold amount of tobacco registered for the taxes is used as activity data instead.

Table: Revised AD, in metric tonnes

	Subm2020	Subm2021	Difference
1990	408.171	169.724	-238.447
1991	435.441	169.724	-265.717
1992	430.880	158.243	-272.637
1993	438.902	147.181	-291.721
1994	452.966	153.485	-299.481
1995	435.306	152.618	-282.688
1996	390.828	155.226	-235.602
1997	381.328	158.332	-222.996
1998	391.045	161.501	-229.544
1999	431.930	170.375	-261.555
2000	336.197	166.077	-170.120
2001	349.237	169.829	-179.408
2002	319.870	176.813	-143.057
2003	334.437	167.661	-166.776
2004	320.141	155.110	-165.031
2005	276.110	150.003	-126.107
2006	276.758	144.814	-131.944
2007	304.975	148.082	-156.893
2008	249.158	136.666	-112.492
2009	216.960	130.702	-86.258
2010	232.027	129.643	-102.384
2011	251.896	136.594	-115.302
2012	251.847	129.331	-122.516
2013	237.208	125.000	-112.208
2014	242.183	125.870	-116.313
2015	250.841	123.250	-127.591
2016	227.667	117.970	-109.697
2017	235.325	117.456	-117.869
2018	235.325	117.026	-118.299

As a result, emission estimates have changed as follows:

Table: Revised emission estimates

Pollutant		1990	1995	2000	2005	2010	2015	2016	2017	2018
NOx	Subm2020	734,71	783,55	605,16	497	417,65	451,51	409,8	423,59	423,59
	Subm2021	305,5	274,71	298,94	270,01	233,36	221,85	212,35	211,42	210,65
	Difference	-429,2	-508,84	-306,22	-226,99	-184,29	-229,66	-197,45	-212,16	-212,94
NH3	Subm2020	2.175	2.320	1.792	1.471	1.236	1.337	1.213	1.254	1.254
	Subm2021	904	813	885	799	691	657	629	626	624
	Difference	-1.271	-1.506	-907	-672	-546	-680	-585	-628	-630
NMVOC	Subm2020	3.903	4.163	3.215	2.640	2.219	2.399	2.177	2.250	2.250
	Subm2021	1.623	1.459	1.588	1.434	1.240	1.179	1.128	1.123	1.119
	Difference	-2.280	-2.703	-1.627	-1.206	-979	-1.220	-1.049	-1.127	-1.131
PM10	Subm2020		8.205	6.337	5.204	4.373	4.728	4.291	4.435	4.435
	Subm2021		2.877	3.130	2.827	2.444	2.323	2.224	2.214	2.206
	Difference		-5.328	-3.206	-2.377	-1.930	-2.405	-2.068	-2.222	-2.230
PM2.5	Subm2020		8.205	6.337	5.204	4.373	4.728	4.291	4.435	4.435
	Subm2021		2.877	3.130	2.827	2.444	2.323	2.224	2.214	2.206
	Difference		-5.328	-3.206	-2.377	-1.930	-2.405	-2.068	-2.222	-2.230
TSP	Subm2020	7.693	8.205	6.337	5.204	4.373	4.728	4.291	4.435	4.435
	Subm2021	3.199	2.877	3.130	2.827	2.444	2.323	2.224	2.214	2.206
	Difference	-4.494	-5.328	-3.206	-2.377	-1.930	-2.405	-2.068	-2.222	-2.230
BC	Subm2020		32,28	24,93	20,47	17,21	18,6	16,88	17,45	17,45
	Subm2021		11,32	12,32	11,12	9,61	9,14	8,75	8,71	8,68
	Difference		-20,96	-12,62	-9,35	-7,59	-9,46	-8,13	-8,74	-8,77
CO	Subm2020	45.925	48.978	37.827	31.066	26.106	28.223	25.615	26.477	26.477
	Subm2021	19.096	17.172	18.686	16.877	14.587	13.867	13.273	13.215	13.167
	Difference	-26.828	-31.806	-19.141	-14.189	-11.520	-14.356	-12.342	-13.262	-13.310
Cd	Subm2020	2,2	2,35	1,82	1,49	1,25	1,35	1,23	1,27	1,27
	Subm2021	0,92	0,82	0,9	0,81	0,7	0,67	0,64	0,63	0,63
	Difference	-1,29	-1,53	-0,92	-0,68	-0,55	-0,69	-0,59	-0,64	-0,64
Cu	Subm2020	2,2	2,35	1,82	1,49	1,25	1,35	1,23	1,27	1,27
	Subm2021	0,92	0,82	0,9	0,81	0,7	0,67	0,64	0,63	0,63
	Difference	-1,29	-1,53	-0,92	-0,68	-0,55	-0,69	-0,59	-0,64	-0,64
Ni	Subm2020	1,1	1,18	0,91	0,75	0,63	0,68	0,61	0,64	0,64
	Subm2021	0,46	0,41	0,45	0,41	0,35	0,33	0,32	0,32	0,32
	Difference	-0,64	-0,76	-0,46	-0,34	-0,28	-0,34	-0,3	-0,32	-0,32
Zn	Subm2020	0,88	0,94	0,72	0,6	0,5	0,54	0,49	0,51	0,51
	Subm2021	0,37	0,33	0,36	0,32	0,28	0,27	0,25	0,25	0,25
	Difference	-0,51	-0,61	-0,37	-0,27	-0,22	-0,27	-0,24	-0,25	-0,25
BaP	Subm2020	0,09	0,09	0,07	0,06	0,05	0,05	0,05	0,05	0,05
	Subm2021	0,04	0,03	0,04	0,03	0,03	0,03	0,03	0,03	0,03
	Difference	-0,05	-0,06	-0,04	-0,03	-0,02	-0,03	-0,02	-0,03	-0,03
BbF	Subm2020	0,11	0,11	0,09	0,07	0,06	0,07	0,06	0,06	0,06
	Subm2021	0,04	0,04	0,04	0,04	0,03	0,03	0,03	0,03	0,03
	Difference	-0,06	-0,07	-0,04	-0,03	-0,03	-0,03	-0,03	-0,03	-0,03
BkF	Subm2020	0,11	0,11	0,09	0,07	0,06	0,07	0,06	0,06	0,06
	Subm2021	0,04	0,04	0,04	0,04	0,03	0,03	0,03	0,03	0,03
	Difference	-0,06	-0,07	-0,04	-0,03	-0,03	-0,03	-0,03	-0,03	-0,03
I(1,2,3-c,d)P	Subm2020	0,17	0,18	0,14	0,12	0,1	0,11	0,1	0,1	0,1
	Subm2021	0,07	0,06	0,07	0,06	0,05	0,05	0,05	0,05	0,05
	Difference	-0,1	-0,12	-0,07	-0,05	-0,04	-0,05	-0,05	-0,05	-0,05
PAHs 1-4	Subm2020	0,47	0,5	0,39	0,32	0,27	0,29	0,26	0,27	0,27
	Subm2021	0,2	0,18	0,19	0,17	0,15	0,14	0,14	0,14	0,14
	Difference	-0,28	-0,33	-0,2	-0,15	-0,12	-0,15	-0,13	-0,14	-0,14
PCDD/F	Subm2020	0,000000041	0,000000044	0,000000034	0,000000028	0,000000023	0,000000025	0,000000023	0,000000024	0,000000024
	Subm2021	0,000000017	0,000000015	0,000000017	0,000000015	0,000000013	0,000000012	0,000000012	0,000000012	0,000000012
	Difference	-0,000000024	-0,000000028	-0,000000017	-0,000000013	-0,000000010	-0,000000013	-0,000000011	-0,000000012	-0,000000012



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

No planned improvements.

¹⁾ Destatis, Versteuerung von Tabakwaren 73411, SBA FS 14 R 9.1.1 Absatz von Tabakwaren

²⁾ EMEP/EEA air pollutant emission inventory guidebook 2019, Copenhagen, 2019