Title of the manuscript: "Cancer mortality in towns in the vicinity of installations for the production of cement, lime, plaster, and magnesium oxide."

Supplementary Data

This document is available as supplementary data for inclusion as online documentation. It includes:

a) Table S1, showing the list of tumors analyzed and their codes as per the International Classification of Diseases-9th Revision (ICD-9) and 10th Revision (ICD-10).

b) Table S2, showing observed and expected cases, and the relative risk of dying from cancer in towns situated at a distance of 5 km or less from installations for the production of cement, lime, plaster, and magnesium oxide as a whole, estimated using BYM models.

c) Table S3, showing Moran's I statistics and *p*-values for spatial autocorrelation analyses, by tumor type.

d) Table S4, showing observed and expected cases, and the relative risk of dying from cancer in towns situated at a distance of 5 km or less from installations for the production of cement, lime, plaster, and magnesium oxide as a whole, estimated using BYM models and shown with a breakdown by category of manufactured product.

e) Table S5, showing a description of industrial facilities analyzed in the paper, including the following information: PRTR code; category of industrial activity; province and municipality where the respective facilities are located; and pollutants released in the last twelve years to both air and water.

f) Table S6, showing the types of substances and amounts released to air by Spanish installations for the production of cement, lime, plaster, and magnesium oxide (IPPC, 2009).

g) Table S7, showing the types of substances and amounts released to water by Spanish installations for the production of cement, lime, plaster, and magnesium oxide (IPPC, 2009).

h) Figure S1, showing geographic distribution of Spanish installations for the production of cement, lime, plaster, and magnesium oxide.

Supplementary data, Table S1.

Tumor	ICD-9	ICD-10
Malignant neoplasm of lip, oral cavity, and pharynx	140-149	C00-C14
Malignant neoplasm of esophagus	150	C15
Malignant neoplasm of stomach	151	C16
Malignant neoplasm of small intestine, including duodenum	152	C17
Malignant neoplasm of colon, rectum, rectosigmoid junction, and anus	153-154, 159.0	C18-C21
Malignant neoplasm of liver, primary	155.0	C22.0
Malignant neoplasm of gallbladder and extrahepatic bile ducts	156	C23-C24
Malignant neoplasm of pancreas	157	C25
Malignant neoplasm of retroperitoneum and peritoneum	158	C45.1, C48
Malignant neoplasm of nasal cavities, middle ear, and accessory	160	C30-C31
Malignant neoplasm of larynx	161	C32
Malignant neoplasm of trachea, bronchus, and lung	162	C33-C34
Malignant neoplasm of pleura	163	C38.4, C45.0
Malignant neoplasm of bone and articular cartilage	170	C40-C41
Malignant neoplasm of connective and other soft tissue	171	C49
Malignant melanoma of skin	172	C43
Other malignant neoplasm of skin	173	C44
Malignant neoplasm of female breast	174	C50
Malignant neoplasm of other and unspecified female genital organs (vulva and vagina)	184	C51, C52
Malignant neoplasm of uterus	179-182	C53-C55
Malignant neoplasm of ovary and other uterine adnexa	183	C56, C57
Malignant neoplasm of prostate	185	C61
Malignant neoplasm of testis	186	C62
Malignant neoplasm of bladder	188	C67
Malignant neoplasm of kidney and other and unspecified urinary organs	189	C64-C66, C68
Malignant neoplasm of brain	191	C71
Malignant neoplasm of other and unspecified parts of nervous system	192	C70, C72
Malignant neoplasm of thyroid gland	193	C73
Malignant neoplasm of other and ill-defined sites, or without specification of site	195-199	C76-C80
Non-Hodgkin lymphoma	200, 202	C82-C85, C96
Hodgkin lymphoma	201	C81
Multiple myeloma and immunoproliferative neoplasms	203	C90
Leukemia	204-208	C91-C95

Supplementary data, Table S2.

	T[a]	Obs[b]	Exp[c]	RR[d]	95%CrI[e]
All cancers[f]					
Total	148	43126	41470.0	1.03	1.00-1.06
Men	148	27179	25845.5	1.04	1.01-1.07
Women	148	15947	15624.4	1.03	1.00-1.06
Oral and pharyngeal cancer					
Total	148	1239	1067.7	1.04	0.94-1.14
Men	148	1044	885.0	1.04	0.93-1.15
Women	148	195	182.7	1.02	0.85-1.21
Oesophageal cancer					
Total	148	993	847.9	1.04	0.94-1.15
Men	148	873	736.2	1.07	0.96-1.19
Women	148	120	111.7	0.89	0.69-1.13
Stomach cancer					
Total	148	2549	2747.0	1.07	0.99-1.16
Men	148	1599	1684.0	1.09	1.00-1.18
Women	148	950	1063.0	1.04	0.94-1.15
Small intestine cancer					
Total	148	61	63.2	0.93	0.66-1.26
Men	148	36	34.4	1.01	0.67-1.44
Women	148	25	28.8	0.87	0.53-1.32
Colorectal cancer					
Total	148	5778	5524.6	1.08	1.03-1.13
Men	148	3214	3081.7	1.07	1.01-1.14
Women	148	2564	2443.0	1.10	1.03-1.16
Liver cancer					
Total	148	1184	1125.7	1.05	0.94-1.17
Men	148	865	818.7	1.06	0.93-1.19
Women	148	319	307.0	1.03	0.85-1.23
Gallbladder cancer					
Total	148	662	612.8	1.09	0.98-1.22
Men	148	238	209.7	1.21	1.02-1.42
Women	148	424	403.2	1.04	0.91-1.19
Pancreatic cancer					
Total	148	1858	1951.4	0.96	0.89-1.03
Men	148	990	1041.1	0.94	0.86-1.03
Women	148	868	910.3	0.96	0.87-1.05
Peritoneal cancer					
Total	148	126	110.6	1.22	0.96-1.53
Men	148	66	50.2	1.62	1.15-2.20
Women	148	60	60.5	0.94	0.69-1.26
Nasal cancer					
Total	148	40	43.1	1.03	0.69-1.46
Men	148	24	30.2	0.87	0.52-1.33
Women	148	16	12.9	1.35	0.70-2.29
Laryngeal cancer					
Total	148	831	821.5	1.02	0.91-1.13
Men	148	797	791.4	1.02	0.91-1.13
Women	148	34	30.0	1.10	0.71-1.60
Lung cancer					
Total	148	8964	8490.5	1.03	0.98-1.08
Men	148	7900	7484.5	1.04	0.98-1.10
Women	148	1064	1006.1	0.97	0.88-1.07
Pleural cancer					
Total	148	158	100.8	1.50	1.15-1.91
Men	148	110	71.7	1.71	1.24-2.28
Women	148	48	29.1	1.22	0.80-1.77
Bones cancer					
Total	148	129	142.7	0.87	0.71-1.06
Men	148	65	83.3	0.70	0.52-0.91
Women	148	64	59.4	1.17	0.86-1.55
Connective and soft tissue cancer					
Total	148	193	202.9	0.97	0.81-1.15
Men	148	101	103.9	1.00	0.79-1.24
Women	148	92	99.0	0.97	0.74-1.23
Melanoma					
Total	148	387	355.0	1.08	0.95-1.22
Men	148	205	190.3	1.06	0.89-1.25
Women	148	182	164.8	1.11	0.92-1.32
Skin cancer					
Total	148	191	205.2	1.09	0.90-1.31
Men	148	103	109.4	1.10	0.85-1.38
Women	148	88	95.8	1.06	0.80-1.37
Breast cancer					
Women	148	2830	2787.7	1.02	0.96-1.09
Vulvar and vaginal cancer					
Women	148	159	153.5	1.07	0.88-1.29
Uterine cancer					
Women	148	900	861.3	1.03	0.93-1.13
Ovarian cancer					
Women	148	799	865.2	0.97	0.88-1.06
Prostate cancer					
Men	148	2279	2396.1	0.98	0.92-1.04
Testicular cancer					
Men	148	16	21.6	0.85	0.45-1.40
Bladder cancer					
Total	148	2030	1846.6	1.07	1.00-1.16
Men	148	1705	1521.0	1.11	1.03-1.20
Women	148	325	325.5	0.96	0.83-1.10
Renal cancer					
Total	148	870	804.4	1.04	0.94-1.14
Men	148	574	533.1	1.03	0.92-1.15
Women	148	296	271.4	1.09	0.94-1.26
Brain cancer					
Total	148	1158	1103.8	1.06	0.97-1.15
Men	148	650	614.4	1.06	0.96-1.15
Women	148	508	489.4	1.05	0.93-1.17
Cancer of other parts of nervous system					
Total	148	3078	2796.9	1.07	1.00-1.14
Men	148	1802	1562.0	1.13	1.04-1.21
Women	148	1276	1234.9	1.01	0.93-1.09
Thyroid cancer					
Total	148	131	125.8	1.03	0.82-1.26
Men	148	45	42.4	1.03	0.72-1.41
Women	148	86	83.4	1.02	0.78-1.31
Ill-defined tumors					
Total	148	3078	2796.9	1.07	1.00-1.14
Men	148	1802	1562.0	1.13	1.04-1.21
Women	148	1276	1234.9	1.01	0.93-1.09
Non-Hodgkin's lymphoma					
Total	148	1150	1093.3	0.98	0.89-1.07
Men	148	612	572.2	1.01	0.90-1.13
Women	148	538	521.0	0.93	0.82-1.05
Hodgkin's lymphoma					
Total	148	120	115.4	1.02	0.81-1.25
Men	148	60	65.3	0.90	0.66-1.18
Women	148	60	50.1	1.19	0.86-1.58
Myeloma					
Total	148	769	694.4	1.06	0.97-1.17
Men	148	378	341.4	1.10	0.97-1.25
Women	148	391	353.0	1.05	0.92-1.19
Leukemia					
Total	155	1460	1363.6	1.06	0.99-1.14
Men	155	815	757.5	1.07	0.98-1.17
Women	155	645	606.1	1.06	0.95-1.17

[a]Number of towns situated at ≤5 km from installations for the production of cement, lime, plaster, and magnesium oxide as a whole.
[b]Observed deaths.
[c]Expected deaths.
[d]RRs adjusted for population size, percentages of illiteracy, farmers and unemployed persons, average persons per household, and mean income
[e]95% credible interval.
[f]Sum of the 33 types of cancer analyzed.

Supplementary data, Table S3.

Tumor	Sex	Observed	Moran's I statistic	*P*-value
All cancers[a]	Total	893060	0.13609260	0.0001
All cancers[a]	Men	561225	0.13390940	0.0001
All cancers[a]	Women	331835	0.03867270	0.0006
Oral cavity-pharynx	Total	21978	0.02851527	0.0039
Oral cavity-pharynx	Men	18136	0.03281445	0.0031
Oral cavity-pharynx	Women	3842	-0.00497693	0.4660
Esophagus	Total	17760	0.01497462	0.0725
Esophagus	Men	15377	0.01346098	0.0979
Esophagus	Women	2383	0.00217831	0.7441
Stomach	Total	59671	0.05919367	0.0001
Stomach	Men	36754	0.02406238	0.0073
Stomach	Women	22917	0.02936369	0.0049
Small intestine	Total	1364	0.02321788	0.0163
Small intestine	Men	744	0.00324212	0.5262
Small intestine	Women	620	0.00357149	0.3594
Colon-rectum	Total	120841	0.03348700	0.0004
Colon-rectum	Men	68095	0.02178990	0.0131
Colon-rectum	Women	52746	0.00376531	0.6319
Liver	Total	24255	0.03272991	0.0012
Liver	Men	17609	0.03650195	0.0014
Liver	Women	6646	0.00174938	0.8100
Gallbladder	Total	13467	0.00899794	0.2574
Gallbladder	Men	4682	0.00450373	0.5436
Gallbladder	Women	8785	-0.00320082	0.6723
Pancreas	Total	41918	0.00662672	0.4224
Pancreas	Men	22328	-0.00178663	0.8569
Pancreas	Women	19590	0.00416046	0.5961
Peritoneum	Total	2347	-0.00743644	0.2266
Peritoneum	Men	1066	-0.00181122	0.7607
Peritoneum	Women	1281	-0.00604124	0.2213
Nasal	Total	908	-0.00354655	0.4886
Nasal	Men	636	-0.00236683	0.6296
Nasal	Women	272	-0.00282667	0.2493
Larynx	Total	17297	0.00871922	0.2829
Larynx	Men	16674	0.00830898	0.3049
Larynx	Women	623	-0.00460573	0.1950
Lung	Total	181027	0.13861970	0.0001
Lung	Men	160104	0.14922080	0.0001
Lung	Women	20923	-0.00076182	0.9473
Pleura	Total	2156	0.00991473	0.1093
Pleura	Men	1538	0.01131336	0.0688
Pleura	Women	618	-0.00120012	0.8281
Bone	Total	2921	0.00620273	0.3433
Bone	Men	1702	0.01073817	0.0778
Bone	Women	1219	-0.00403557	0.4080
Connective and soft tissue	Total	4182	-0.00422738	0.5665
Connective and soft tissue	Men	2148	-0.00242306	0.7297
Connective and soft tissue	Women	2034	-0.00170239	0.7879
Melanoma	Total	7401	-0.00359993	0.6458
Melanoma	Men	3987	-0.00314765	0.6672
Melanoma	Women	3414	0.00252278	0.7087
Skin	Total	4632	0.00603235	0.3792
Skin	Men	2498	0.00456981	0.4815
Skin	Women	2134	0.00701161	0.2312
Breast	Women	57830	0.01816782	0.0409
Vulva and vagina	Women	3355	-0.00728299	0.2742
Uterus	Women	18080	0.01081323	0.1745
Ovary	Women	18046	0.00180327	0.8134
Prostate gland	Men	55772	0.02395405	0.0060
Testis	Men	425	-0.00083472	0.8640
Bladder	Total	41282	0.02099862	0.0140
Bladder	Men	34107	0.02300539	0.0092
Bladder	Women	7175	-0.00249227	0.7499
Kidney	Total	17341	0.00365353	0.6497
Kidney	Men	11532	0.00548841	0.4631
Kidney	Women	5809	-0.00015571	0.9937
Brain	Total	22689	0.00063534	0.9354
Brain	Men	12622	-0.01103704	0.1687
Brain	Women	10067	0.00870612	0.2573
Other central nervous system	Total	801	-0.00565016	0.1698
Other central nervous system	Men	400	-0.00331781	0.2930
Other central nervous system	Women	401	-0.00124413	0.7755
Thyroid gland	Total	2711	0.00413772	0.5100
Thyroid gland	Men	911	-0.00197359	0.7459
Thyroid gland	Women	1800	0.00385805	0.4953
Ill-defined	Total	60638	0.01733277	0.0393
Ill-defined	Men	33968	0.00926813	0.2712
Ill-defined	Women	26670	0.00911907	0.2623
Non-Hodgkin's lymphoma	Total	23338	0.00724669	0.3802
Non-Hodgkin's lymphoma	Men	12229	0.00254773	0.7342
Non-Hodgkin's lymphoma	Women	11109	0.01269486	0.1000
Hodgkin's lymphoma	Total	2379	-0.00386222	0.5652
Hodgkin's lymphoma	Men	1345	-0.00582930	0.2573
Hodgkin's lymphoma	Women	1034	-0.00223628	0.6798
Myeloma	Total	15178	0.01292908	0.1116
Myeloma	Men	7541	-0.00104481	0.8915
Myeloma	Women	7637	0.00892536	0.2204
Leukemia	Total	29070	0.00379937	0.6310
Leukemia	Men	16295	0.01199455	0.1279
Leukemia	Women	12775	-0.00888875	0.2602

[a]Sum of the 33 types of cancer analyzed.

Supplementary data, Table S4.

Type of manufactured product	T[a]	Total				Men				Women			
		Obs[b]	Exp[c]	RR[d]	95%CrI[e]	Obs[b]	Exp[c]	RR[d]	95%CrI[e]	Obs[b]	Exp[c]	RR[d]	95%CrI[e]
All cancers[f]													
Cement	87	36667	35128.6	1.04	1.01-1.07	23140	21834.1	1.05	1.01-1.09	13527	13294.5	1.02	0.99-1.05
Lime	48	4895	4784.9	1.03	0.98-1.09	3085	3027.3	1.02	0.96-1.09	1810	1757.6	1.05	0.98-1.11
Plaster	11	883	871.7	0.99	0.88-1.11	533	557.6	0.96	0.83-1.10	350	314.1	1.12	0.98-1.28
Magnesium oxide	1	29	44.2	0.73	0.47-1.05	18	30.2	0.70	0.40-1.10	11	14.0	0.83	0.41-1.40
Multiple pollutant categories	1	652	640.6	0.99	0.81-1.20	403	396.3	1.03	0.82-1.29	249	244.3	0.97	0.80-1.17
Oral and pharyngeal cancer													
Cement	87	1064	907.9	1.01	0.90-1.12	903	752.4	1.02	0.91-1.14	161	155.5	0.97	0.80-1.17
Lime	48	135	119.4	1.15	0.93-1.41	106	99.0	1.08	0.85-1.34	29	20.5	1.45	0.95-2.06
Plaster	11	22	23.6	1.15	0.68-1.77	19	19.9	1.20	0.68-1.89	3	3.8	0.79	0.17-1.92
Magnesium oxide	1	1	1.0	1.15	0.04-4.34	1	0.9	1.43	0.05-5.39	0	0.2	0	0-inf
Multiple pollutant categories	1	17	15.7	1.17	0.60-2.00	15	12.8	1.25	0.61-2.19	2	2.9	0.70	0.10-1.96
Oesophageal cancer													
Cement	87	876	720.6	1.07	0.96-1.20	773	625.5	1.11	0.98-1.24	103	95.1	0.88	0.67-1.13
Lime	48	88	95.7	0.88	0.68-1.11	75	83.1	0.88	0.67-1.12	13	12.6	0.93	0.48-1.57
Plaster	11	20	18.3	1.37	0.79-2.12	17	16.0	1.32	0.74-2.12	3	2.2	1.58	0.33-3.93
Magnesium oxide	1	2	0.8	2.51	0.33-7.17	2	0.7	2.81	0.37-8.04	0	0.1	0	0-inf
Multiple pollutant categories	1	7	12.6	0.58	0.22-1.16	6	10.8	0.59	0.20-1.22	1	1.8	0.55	0.02-2.07
Stomach cancer													
Cement	87	2148	2324.9	1.08	0.99-1.18	1354	1422.0	1.10	0.99-1.21	794	902.9	1.05	0.94-1.17
Lime	48	313	319.1	1.07	0.91-1.25	197	198.0	1.13	0.94-1.35	116	121.1	0.99	0.78-1.23
Plaster	11	52	57.1	1.01	0.70-1.40	31	36.1	0.94	0.60-1.37	21	21.0	1.07	0.63-1.64
Magnesium oxide	1	3	3.0	1.04	0.22-2.60	1	2.0	0.49	0.02-1.85	2	1.0	2.16	0.28-6.18
Multiple pollutant categories	1	33	42.9	0.90	0.51-1.46	16	25.9	0.71	0.35-1.24	17	17.0	1.21	0.62-2.09
Small intestine cancer													
Cement	87	53	53.5	0.93	0.64-1.28	34	29.0	1.12	0.73-1.60	19	24.5	0.77	0.44-1.22
Lime	48	6	7.3	0.89	0.32-1.78	2	4.0	0.54	0.07-1.52	4	3.3	1.27	0.34-2.86
Plaster	11	1	1.3	0.86	0.04-3.18	0	0.7	0	0-inf	1	0.6	1.82	0.06-6.87
Magnesium oxide	1	0	0.1	0	0-inf	0	0.0	0	0-inf	0	0.0	0	0-inf
Multiple pollutant categories	1	1	1.0	1.20	0.05-4.64	0	0.5	0	0-inf	1	0.5	2.27	0.08-8.68
Colorectal cancer													
Cement	87	4918	4673.9	1.09	1.03-1.15	2713	2598.1	1.07	1.00-1.14	2205	2075.7	1.11	1.04-1.19
Lime	48	643	644.1	1.05	0.95-1.16	379	366.1	1.08	0.95-1.26	264	278.0	1.01	0.87-1.15
Plaster	11	121	113.4	1.14	0.90-1.40	62	65.5	1.08	0.80-1.42	59	47.8	1.27	0.94-1.65
Magnesium oxide	1	4	6.1	0.76	0.21-1.71	3	3.8	0.90	0.19-2.21	1	2.3	0.52	0.02-1.97
Multiple pollutant categories	1	92	87.2	0.97	0.70-1.29	57	48.1	1.09	0.75-1.52	35	39.1	0.85	0.56-1.21
Liver cancer													
Cement	87	1014	954.4	1.04	0.92-1.18	735	693.2	1.03	0.90-1.18	279	261.2	1.05	0.86-1.28
Lime	48	128	129.6	1.08	0.84-1.36	97	94.8	1.15	0.88-1.47	31	34.8	0.98	0.61-1.45
Plaster	11	24	23.4	1.07	0.62-1.70	18	17.6	1.14	0.62-1.87	6	5.9	1.00	0.34-2.10
Magnesium oxide	1	1	1.2	1.53	0.06-5.79	1	0.9	1.90	0.07-7.21	0	0.3	0	0-inf
Multiple pollutant categories	1	17	17.1	1.02	0.46-1.91	14	12.3	1.14	0.51-2.17	3	4.8	0.58	0.11-1.56
Gallbladder cancer													
Cement	87	568	519.1	1.12	0.99-1.26	208	176.6	1.27	1.06-1.51	360	342.6	1.05	0.90-1.21
Lime	48	70	71.2	0.97	0.73-1.24	23	25.1	0.98	0.61-1.44	47	46.1	0.99	0.71-1.33
Plaster	11	13	12.1	1.15	0.60-1.91	2	4.4	0.53	0.07-1.50	11	7.7	1.42	0.69-2.46
Magnesium oxide	1	1	0.7	1.39	0.05-5.13	0	0.3	0	0-inf	1	0.4	2.23	0.08-8.42
Multiple pollutant categories	1	10	9.8	1.09	0.49-2.00	5	3.3	1.61	0.50-3.47	5	6.5	0.85	0.26-1.86
Pancreatic cancer													
Cement	87	1595	1655.8	0.97	0.89-1.04	856	881.3	0.96	0.87-1.06	739	774.5	0.95	0.85-1.05
Lime	48	203	223.3	0.95	0.81-1.11	103	120.4	0.88	0.70-1.08	100	102.9	1.03	0.82-1.27
Plaster	11	36	40.3	0.97	0.66-1.34	17	22.5	0.80	0.46-1.25	19	17.7	1.18	0.69-1.80
Magnesium oxide	1	3	2.0	1.38	0.29-3.38	2	1.1	1.69	0.22-4.80	1	0.8	1.06	0.04-4.00
Multiple pollutant categories	1	21	30.1	0.69	0.40-1.08	12	15.7	0.74	0.36-1.26	9	14.4	0.63	0.28-1.15
Peritoneal cancer													
Cement	87	104	94.0	1.16	0.90-1.48	56	42.5	1.61	1.12-2.24	48	51.5	0.88	0.62-1.21
Lime	48	17	12.5	1.55	0.87-2.46	7	5.8	1.61	0.62-3.20	10	6.8	1.39	0.65-2.45
Plaster	11	2	2.3	0.94	0.12-2.69	0	1.1	0	0-inf	2	1.2	1.59	0.20-4.51
Magnesium oxide	1	1	0.1	9.76	0.37-37.31	1	0.1	20.15	0.79-78.68	0	0.1	0	0-inf
Multiple pollutant categories	1	2	1.7	1.25	0.16-3.69	2	0.8	3.63	0.45-11.21	0	0.9	0	0-inf
Nasal cancer													
Cement	87	36	36.6	1.09	0.72-1.57	21	25.6	0.89	0.52-1.40	15	11.0	1.50	0.77-2.57
Lime	48	3	4.9	0.73	0.16-1.80	2	3.5	0.68	0.09-1.94	1	1.4	0.78	0.03-2.93
Plaster	11	0	0.9	0	0-inf	0	0.7	0	0-inf	0	0.3	0	0-inf
Magnesium oxide	1	0	0.0	0	0-inf	0	0.0	0	0-inf	0	0.0	0	0-inf
Multiple pollutant categories	1	1	0.7	2.00	0.10-7.27	1	0.5	2.93	0.11-11.31	0	0.2	0	0-inf
Laryngeal cancer													
Cement	87	718	697.3	1.03	0.92-1.16	687	671.7	1.03	0.91-1.16	31	25.6	1.17	0.74-1.73
Lime	48	94	93.4	1.01	0.79-1.27	91	90.1	1.01	0.78-1.27	3	3.3	0.96	0.20-2.37
Plaster	11	14	17.7	0.96	0.50-1.59	14	17.1	0.98	0.51-1.63	0	0.6	0	0-inf
Magnesium oxide	1	1	0.9	1.41	0.05-5.30	1	0.8	1.45	0.05-5.49	0	0.0	0	0-inf
Multiple pollutant categories	1	4	12.2	0.39	0.10-0.90	4	11.7	0.41	0.11-0.95	0	0.5	0	0-inf
Lung cancer													
Cement	87	7672	7197.9	1.04	0.98-1.10	6750	6340.5	1.05	0.99-1.12	922	857.4	0.97	0.87-1.08
Lime	48	977	974.3	1.02	0.92-1.13	864	862.7	1.01	0.90-1.12	113	111.7	1.07	0.84-1.32
Plaster	11	173	181.8	0.93	0.73-1.15	157	160.9	0.95	0.73-1.20	16	20.9	0.80	0.44-1.29
Magnesium oxide	1	2	9.0	0.30	0.04-0.85	2	8.1	0.35	0.05-1.00	0	0.8	0	0-inf
Multiple pollutant categories	1	140	127.6	1.13	0.79-1.57	127	112.2	1.21	0.82-1.73	13	15.3	0.74	0.36-1.31
Pleural cancer													
Cement	87	143	85.6	1.59	1.19-2.06	100	60.7	1.86	1.33-2.52	43	24.8	1.22	0.78-1.81
Lime	48	8	11.5	0.85	0.35-1.61	6	8.3	0.94	0.33-1.94	2	3.3	0.66	0.09-1.91
Plaster	11	6	2.1	3.44	1.14-7.40	4	1.5	3.12	0.77-7.63	2	0.6	5.10	0.64-14.99
Magnesium oxide	1	0	0.1	0	0-inf	0	0.1	0	0-inf	0	0.0	0	0-inf
Multiple pollutant categories	1	1	1.5	0.61	0.02-2.39	0	1.1	0	0-inf	1	0.4	1.92	0.07-7.53
Bones cancer													
Cement	87	109	120.7	0.87	0.69-1.08	54	70.3	0.69	0.50-0.91	55	50.3	1.20	0.86-1.61
Lime	48	10	16.3	0.61	0.29-1.05	5	9.6	0.49	0.16-1.02	5	6.7	0.79	0.25-1.65
Plaster	11	6	3.5	1.66	0.61-3.28	2	2.1	0.85	0.11-2.39	4	1.4	3.16	0.85-7.14

Type of manufactured product	T[a]	Total				Men				Women			
		Obs[b]	Exp[c]	RR[d]	95%CrI[e]	Obs[b]	Exp[c]	RR[d]	95%CrI[e]	Obs[b]	Exp[c]	RR[d]	95%CrI[e]
Magnesium oxide	1	0	0.1	0	0-inf	0	0.1	0	0-inf	0	0.0	0	0-inf
Multiple pollutant categories	1	4	2.2	1.82	0.49-4.12	4	1.2	3.03	0.81-6.96	0	0.9	0	0-inf
Connective and soft tissue cancer													
Cement	87	165	172.1	0.98	0.80-1.17	86	87.8	1.00	0.77-1.26	79	84.3	0.98	0.73-1.26
Lime	48	19	22.9	0.83	0.49-1.27	11	11.9	0.98	0.48-1.65	8	11.0	0.73	0.31-1.34
Plaster	11	7	4.7	1.67	0.66-3.19	2	2.5	0.84	0.11-2.37	5	2.2	2.68	0.86-5.66
Magnesium oxide	1	0	0.2	0	0-inf	0	0.1	0	0-inf	0	0.1	0	0-inf
Multiple pollutant categories	1	2	3.0	0.70	0.09-1.99	2	1.6	1.35	0.17-3.83	0	1.5	0	0-inf
Melanoma													
Cement	87	323	300.9	1.05	0.91-1.20	168	160.8	1.02	0.84-1.22	155	140.1	1.11	0.90-1.34
Lime	48	38	40.3	0.96	0.67-1.31	21	21.9	0.99	0.61-1.48	17	18.4	0.94	0.54-1.46
Plaster	11	16	8.0	2.11	1.19-3.31	10	4.5	2.34	1.12-4.04	6	3.6	1.81	0.66-3.59
Magnesium oxide	1	1	0.3	3.01	0.10-11.38	0	0.2	0	0-inf	1	0.1	6.43	0.21-24.36
Multiple pollutant categories	1	9	5.4	1.55	0.69-2.81	6	2.9	1.91	0.69-3.84	3	2.5	1.15	0.24-2.85
Skin cancer													
Cement	87	161	172.4	1.12	0.90-1.37	86	91.6	1.10	0.83-1.41	75	80.8	1.10	0.81-1.46
Lime	48	26	24.8	1.13	0.71-1.66	15	13.4	1.24	0.67-1.99	11	11.4	1.03	0.50-1.79
Plaster	11	4	4.3	0.87	0.23-1.99	2	2.4	0.93	0.12-2.66	2	1.9	0.82	0.11-2.37
Magnesium oxide	1	0	0.3	0	0-inf	0	0.2	0	0-inf	0	0.1	0	0-inf
Multiple pollutant categories	1	0	3.5	0	0-inf	0	1.8	0	0-inf	0	1.7	0	0-inf
Breast cancer													
Cement	87									2361	2377.4	0.99	0.92-1.06
Lime	48									342	308.0	1.11	0.97-1.27
Plaster	11									69	57.6	1.28	0.96-1.65
Magnesium oxide	1									1	2.4	0.47	0.02-1.75
Multiple pollutant categories	1									57	42.4	1.24	0.86-1.73
Vulvar and vaginal cancer													
Cement	87									125	130.2	0.99	0.79-1.22
Lime	48									29	17.7	1.65	1.08-2.36
Plaster	11									1	3.0	0.31	0.01-1.18
Magnesium oxide	1									0	0.2	0	0-inf
Multiple pollutant categories	1									4	2.5	1.68	0.45-3.83
Uterine cancer													
Cement	87									753	733.9	0.99	0.89-1.10
Lime	48									111	95.9	1.17	0.93-1.43
Plaster	11									22	17.5	1.35	0.82-2.03
Magnesium oxide	1									1	0.7	1.59	0.05-6.01
Multiple pollutant categories	1									13	13.2	1.03	0.51-1.77
Ovarian cancer													
Cement	87									680	738.6	0.96	0.87-1.06
Lime	48									91	95.4	1.00	0.79-1.23
Plaster	11									22	17.4	1.41	0.87-2.09
Magnesium oxide	1									0	0.7	0	0-inf
Multiple pollutant categories	1									6	13.1	0.48	0.17-0.95
Prostate cancer													
Cement	87					1877	2004.7	0.97	0.90-1.04				
Lime	48					311	298.4	1.04	0.90-1.19				
Plaster	11					49	49.5	0.97	0.70-1.30				
Magnesium oxide	1					1	3.6	0.26	0.01-1.00				
Multiple pollutant categories	1					41	39.9	1.00	0.66-1.43				
Testicular cancer													
Cement	87					12	18.2	0.74	0.36-1.30				
Lime	48					2	2.5	0.95	0.12-2.71				
Plaster	11					2	0.6	4.22	0.53-12.43				
Magnesium oxide	1					0	0.0	0	0-inf				
Multiple pollutant categories	1					0	0.3	0	0-inf				
Bladder cancer													
Cement	87	1752	1555.9	1.11	1.02-1.20	1471	1280.3	1.14	1.05-1.25	281	275.6	0.98	0.84-1.13
Lime	48	214	220.6	0.99	0.84-1.16	185	182.8	1.05	0.88-1.25	29	37.8	0.76	0.50-1.08
Plaster	11	37	38.2	0.98	0.66-1.37	30	31.9	0.97	0.63-1.41	7	6.3	1.13	0.45-2.14
Magnesium oxide	1	0	2.3	0	0-inf	0	2.0	0	0-inf	0	0.3	0	0-inf
Multiple pollutant categories	1	27	29.5	0.92	0.54-1.42	19	24.1	0.82	0.45-1.34	8	5.4	1.38	0.58-2.58
Renal cancer													
Cement	87	722	681.3	1.00	0.90-1.11	482	450.5	1.01	0.89-1.13	240	230.8	1.02	0.86-1.20
Lime	48	125	92.9	1.33	1.08-1.61	79	62.3	1.26	0.97-1.58	46	30.7	1.54	1.10-2.06
Plaster	11	11	16.9	0.73	0.40-1.24	8	11.5	0.77	0.33-1.41	3	5.4	0.60	0.13-1.47
Magnesium oxide	1	0	0.9	0	0-inf	0	0.6	0	0-inf	0	0.2	0	0-inf
Multiple pollutant categories	1	12	12.4	0.91	0.45-1.57	5	8.1	0.58	0.19-1.23	7	4.3	1.66	0.64-3.23
Brain cancer													
Cement	87	961	938.1	1.02	0.93-1.11	545	520.6	1.04	0.93-1.16	416	417.5	0.99	0.87-1.12
Lime	48	149	123.4	1.25	1.03-1.48	78	69.6	1.16	0.90-1.45	71	53.8	1.37	1.05-1.74
Plaster	11	27	24.9	1.15	0.74-1.65	17	14.5	1.24	0.71-1.93	10	10.4	1.01	0.48-1.76
Magnesium oxide	1	2	1.0	1.72	0.22-4.86	1	0.6	1.59	0.05-6.01	1	0.4	2.03	0.07-7.66
Multiple pollutant categories	1	19	16.3	1.18	0.67-1.85	9	9.0	1.02	0.45-1.85	10	7.3	1.38	0.64-2.45
Cancer of other parts of nervous system													
Cement	87	42	32.6	1.43	0.92-2.10	18	16.2	1.17	0.65-1.89	24	16.4	1.70	0.91-2.86
Lime	48	2	4.4	0.55	0.07-1.57	1	2.2	0.48	0.02-1.80	1	2.1	0.67	0.02-2.55
Plaster	11	1	0.9	1.62	0.06-6.23	0	0.5	0	0-inf	1	0.4	4.06	0.15-15.98
Magnesium oxide	1	0	0.0	0	0-inf	0	0.0	0	0-inf	0	0.0	0	0-inf
Multiple pollutant categories	1	1	0.6	2.22	0.09-8.71	0	0.3	0	0-inf	1	0.3	4.20	0.15-17.60
Thryroid cancer													
Cement	87	111	106.8	1.02	0.80-1.27	40	35.9	1.09	0.74-1.52	71	70.9	0.98	0.73-1.29
Lime	48	17	14.4	1.19	0.68-1.86	4	4.9	0.80	0.22-1.77	13	9.5	1.41	0.73-2.33
Plaster	11	2	2.5	0.80	0.10-2.27	1	0.9	1.01	0.03-3.83	1	1.6	0.64	0.02-2.40
Magnesium oxide	1	0	0.1	0	0-inf	0	0.0	0	0-inf	0	0.1	0	0-inf
Multiple pollutant categories	1	1	2.0	0.50	0.02-1.86	0	0.6	0	0-inf	1	1.3	0.73	0.03-2.78
Ill-defined tumors													
Cement	87	2629	2367.5	1.08	1.01-1.15	1530	1319.0	1.12	1.03-1.21	1099	1048.5	1.03	0.94-1.12
Lime	48	335	324.3	1.02	0.89-1.17	209	183.4	1.18	0.99-1.38	126	140.9	0.86	0.70-1.04
Plaster	11	67	58.2	1.15	0.85-1.49	37	33.8	1.18	0.80-1.66	30	24.4	1.18	0.78-1.68

Type of manufactured product	T[a]	Total				Men				Women			
		Obs[b]	Exp[c]	RR[d]	95%CrI[e]	Obs[b]	Exp[c]	RR[d]	95%CrI[e]	Obs[b]	Exp[c]	RR[d]	95%CrI[e]
Magnesium oxide	1	1	3.0	0.43	0.01-1.61	0	1.9	0	0-inf	1	1.2	0.97	0.03-3.64
Multiple pollutant categories	1	46	43.9	1.06	0.70-1.52	26	24.0	1.09	0.64-1.68	20	19.8	1.06	0.61-1.66
Non-Hodgkin's lymphoma													
Cement	87	1005	926.5	1.03	0.93-1.13	530	483.2	1.05	0.92-1.19	475	443.3	0.97	0.85-1.10
Lime	48	115	125.5	0.85	0.68-1.04	67	66.7	0.93	0.70-1.21	48	58.7	0.78	0.56-1.04
Plaster	11	18	23.4	0.82	0.47-1.27	8	13.0	0.67	0.28-1.23	10	10.4	1.02	0.48-1.79
Magnesium oxide	1	0	1.1	0	0-inf	0	0.6	0	0-inf	0	0.5	0	0-inf
Multiple pollutant categories	1	12	16.8	0.64	0.31-1.12	7	8.7	0.74	0.28-1.47	5	8.1	0.54	0.17-1.16
Hodgkin's lymphoma													
Cement	87	99	97.6	0.99	0.78-1.24	46	55.1	0.82	0.58-1.11	53	42.5	1.24	0.88-1.67
Lime	48	15	13.2	1.09	0.60-1.74	9	7.5	1.15	0.52-2.05	6	5.6	1.05	0.38-2.08
Plaster	11	3	2.8	1.07	0.22-2.61	2	1.6	1.20	0.15-3.39	1	1.1	0.88	0.03-3.32
Magnesium oxide	1	0	0.1	0	0-inf	0	0.1	0	0-inf	0	0.0	0	0-inf
Multiple pollutant categories	1	3	1.7	1.57	0.32-3.89	3	1.0	2.76	0.57-6.84	0	0.8	0	0-inf
Myeloma													
Cement	87	655	588.4	1.07	0.96-1.18	324	288.0	1.13	0.98-1.29	331	300.4	1.04	0.90-1.19
Lime	48	85	80.5	1.03	0.81-1.29	38	40.5	0.93	0.65-1.26	47	40.0	1.16	0.84-1.54
Plaster	11	11	13.9	0.76	0.37-1.28	7	7.2	0.96	0.38-1.82	4	6.8	0.57	0.16-1.27
Magnesium oxide	1	1	0.7	1.46	0.05-5.49	0	0.4	0	0-inf	1	0.3	3.18	0.10-12.02
Multiple pollutant categories	1	17	10.9	1.48	0.83-2.35	9	5.3	1.63	0.73-2.95	8	5.6	1.38	0.58-2.57
Leukemia													
Cement	90	1225	1151.1	1.05	0.97-1.13	685	637.1	1.07	0.97-1.17	540	514.0	1.05	0.94-1.16
Lime	52	177	160.4	1.13	0.95-1.32	100	90.8	1.13	0.91-1.38	77	69.5	1.10	0.86-1.38
Plaster	11	24	29.6	0.81	0.51-1.19	15	17.1	0.93	0.51-1.47	9	12.6	0.69	0.32-1.22
Magnesium oxide	1	2	1.4	1.60	0.20-4.51	2	0.9	2.50	0.32-7.08	0	0.5	0	0-inf
Multiple pollutant categories	1	32	21.1	1.38	0.91-1.98	13	11.7	1.06	0.55-1.75	19	9.5	1.80	1.06-2.77

[a]Number of towns situated at ≤5 km from installations for the production of cement, lime, plaster, and magnesium oxide as a whole.
[b]Observed deaths.
[c]Expected deaths.
[d]RRs adjusted for population size, percentages of illiteracy, farmers and unemployed persons, average persons per household, and mean income
[e]95% credible interval.
[f]Sum of the 33 types of cancer analyzed.

Supplementary data, Table S5.

				Pollutants released in the last twelve years[a]	
PRTR code	Industrial activity	Province	Municipality	Air	Water
141	Cement	VALENCIA	Sagunto	Methane, CO, CO_2, NMVOC[b], NO_2, SO_2, arsenic, cadmium, chromium, copper, mercury, nickel, lead, zinc, dioxins and furans, benzene, PAHs, chlorine, PM_{10}, naphthalene, anthracene, fluorine, PCBs	
142	Cement	CORDOBA	Córdoba	CO, CO_2, nitrous oxide, NMVOC[b], NO_2, SO_2, arsenic, cadmium, chromium, copper, mercury, nickel, lead, zinc, dioxins and furans, benzene, PAHs, chlorine, PM_{10}, total suspended particles, vanadium, manganese, cobalt, total organic carbon, ammonia, fluorine, antimony, hydrogen cyanide, thallium	
143	Cement	TOLEDO	Villaluenga de la Sagra	Methane, CO, CO_2, nitrous oxide, NMVOC[b], NO_2, SO_2, arsenic, cadmium, chromium, copper, mercury, nickel, lead, zinc, benzene, PAHs, chlorine, PM_{10}, total suspended particles, fluorine	Nitrogen, phosphorus, total organic carbon
144	Cement	BARCELONA	Montcada i Reixac	CO, CO_2, NMVOC[b], NO_2, SO_2, arsenic, cadmium, chromium, copper, mercury, nickel, lead, zinc, dioxins and furans, benzene, PAHs, chlorine, PM_{10}, total suspended particles, naphthalene, anthracene, vanadium, manganese, cobalt, total organic carbon, ammonia, fluorine, PCBs, antimony, hydrogen cyanide, di-(2-ethyl hexyl) phthalate, thallium	
145	Cement	HUELVA	Niebla	CO, CO_2, nitrous oxide, NMVOC[b], NO_2, SO_2, arsenic, cadmium, chromium, copper, mercury, nickel, lead, zinc, dioxins and furans, benzene, PAHs, chlorine, PM_{10}, total suspended particles, naphthalene, anthracene, vanadium, manganese, cobalt, total organic carbon, ammonia, fluorine, PCBs, antimony, hydrogen cyanide, di-(2-ethyl hexyl) phthalate, thallium	
296	Cement	BARCELONA	Sant Vicenç dels Horts	CO, CO_2, nitrous oxide, NMVOC[b], NO_2, SO_2, arsenic, cadmium, chromium, copper, mercury, nickel, lead, zinc, dioxins and furans, benzene, PAHs, chlorine, PM_{10}, total suspended particles, naphthalene, anthracene, vanadium, manganese, cobalt, total organic carbon, ammonia, fluorine, PCBs, antimony, hydrogen cyanide, di-(2-ethyl hexyl) phthalate, thallium	Copper, zinc, nitrogen, phosphorus, phenols, total organic carbon, chlorides
1082	Cement	HUELVA	Palos de la Frontera	Total suspended particles	
1494	Cement	TOLEDO	Yeles	Methane, CO, CO_2, nitrous oxide, NMVOC[b], NO_2, SO_2, arsenic, cadmium, chromium, copper, mercury, nickel, lead, zinc, PAHs, chlorine, total suspended particles, fluorine	Nitrogen, phosphorus, total organic carbon
1496	Cement	LUGO	Sarria	CO, CO_2, nitrous oxide, NMVOC[b], NO_2, SO_2, arsenic, cadmium, chromium, copper, mercury, nickel, lead, zinc, dioxins and furans, benzene, PAHs, chlorine, PM_{10}, naphthalene, anthracene, ammonia, fluorine, PCBs, hydrogen cyanide, di-(2-ethyl hexyl) phthalate,	
1497	Cement	LEON	Villadecanes	CO, CO_2, nitrous oxide, NMVOC[b], NO_2, SO_2, arsenic, cadmium, chromium, copper, mercury, nickel, lead, zinc, dioxins and furans, benzene, PAHs, chlorine, PM_{10}, total suspended particles, naphthalene, anthracene, vanadium, manganese, cobalt, total organic carbon, ammonia, fluorine, PCBs, antimony, hydrogen cyanide, di-(2-ethyl hexyl) phthalate, thallium	
1512	Cement	MALAGA	Málaga	CO, CO_2, nitrous oxide, NMVOC[b], NO_2, SO_2, arsenic, cadmium, chromium, copper, mercury, nickel, lead, zinc, dioxins and furans, benzene, PAHs, chlorine, PM_{10}, total suspended particles, naphthalene, anthracene, vanadium, manganese, cobalt, ammonia, fluorine, PCBs, antimony, hydrogen cyanide, di-(2-ethyl hexyl) phthalate, thallium	
1570	Cement	CADIZ	Jerez de la Frontera	CO, CO_2, nitrous oxide, NMVOC[b], NO_2, SO_2, arsenic, cadmium, chromium, copper, mercury, nickel, dioxins and furans, benzene, PAHs, PM_{10}, total suspended particles, naphthalene, manganese, total organic carbon, ammonia, hydrogen cyanide, di-(2-ethyl hexyl) phthalate,	
1572	Cement	ALMERIA	Gádor	CO, CO_2, nitrous oxide, NMVOC[b], NO_2, SO_2, arsenic, cadmium, chromium, copper, mercury, nickel, lead, zinc, dioxins and furans, benzene, PAHs, chlorine, PM_{10}, total suspended particles, naphthalene, anthracene, vanadium, manganese, cobalt, ammonia, fluorine, PCBs, antimony, hydrogen cyanide, di-(2-ethyl hexyl) phthalate, thallium	
1573	Cement	ALMERIA	Carboneras	CO, CO_2, NMVOC[b], NO_2, SO_2, arsenic, cadmium, chromium, copper, mercury, nickel, zinc, dioxins and furans, benzene, PAHs, chlorine, PM_{10}, naphthalene, anthracene, vanadium, hydrogen cyanide, di-(2-ethyl hexyl) phthalate	Lead, zinc, nitrogen, phosphorus, total organic carbon, fluorides
1574	Cement	MURCIA	Lorca	CO, CO_2, nitrous oxide, NMVOC[b], NO_2, SO_2, arsenic, cadmium, chromium, copper, mercury, nickel, lead, zinc, dioxins and furans, benzene, PAHs, chlorine, PM_{10}, total suspended particles, naphthalene, anthracene, vanadium, manganese, cobalt, total organic carbon, ammonia, fluorine, PCBs, antimony, hydrogen cyanide, di-(2-ethyl hexyl) phthalate, thallium	
1757	Cement	SEVILLA	Alcalá de Guadaíra	CO, CO_2, nitrous oxide, NMVOC[b], NO_2, SO_2, cadmium, chromium, dioxins and furans, benzene, PAHs, chlorine, PM_{10}, total suspended particles, naphthalene, anthracene, ammonia, fluorine, PCBs	
1758	Cement	PALENCIA	Venta de Baños	CO, CO_2, nitrous oxide, NMVOC[b], NO_2, SO_2, arsenic, cadmium, chromium, copper, mercury, nickel, lead, zinc, benzene, PAHs, chlorine, PM_{10}, naphthalene, ammonia, fluorine, hydrogen cyanide, di-(2-ethyl hexyl) phthalate	Total organic carbon
1759	Cement	MADRID	Morata de Tajuña	CO, CO_2, nitrous oxide, NMVOC[b], NO_2, SO_2, arsenic, cadmium, chromium, copper, mercury, nickel, lead, zinc, dioxins and furans, benzene, PAHs, chlorine, PM_{10}, total suspended particles, naphthalene, ammonia, vanadium, manganese, cobalt, total organic carbon, fluorine, PCBs, hydrogen cyanide, thallium	
1760	Cement	NAVARRE	Olazti	Methane, CO, CO_2, nitrous oxide, NMVOC[b], NO_2, SO_2, arsenic, cadmium, chromium, copper, lead, zinc, benzene, PAHs, chlorine, PM_{10}, naphthalene, ammonia, manganese, cobalt, PCBs, antimony, hydrogen cyanide, thallium	COD[c]
1914	Cement	ASTURIAS	Oviedo	CO, CO_2, nitrous oxide, NMVOC[b], NO_2, SO_2, arsenic, cadmium, chromium, copper, mercury, nickel, lead, zinc, dioxins and furans, benzene, PAHs, chlorine, PM_{10}, naphthalene, ammonia, fluorine, hydrogen cyanide, di-(2-ethyl hexyl) phthalate	
1915	Cement	ASTURIAS	Carreño	CO, CO_2, nitrous oxide, NMVOC[b], NO_2, SO_2, arsenic, cadmium, chromium, copper, mercury, nickel, lead, zinc, dioxins and furans, benzene, PAHs, chlorine, PM_{10}, naphthalene, anthracene, ammonia, fluorine, PCBs, hydrogen cyanide, di-(2-ethyl hexyl) phthalate	Total organic carbon, COD[c]
1916	Cement	LEON	La Robla	CO, CO_2, nitrous oxide, NMVOC[b], NO_2, SO_2, arsenic, cadmium, chromium, copper, mercury, nickel, lead, zinc, dioxins and furans, benzene, PAHs, chlorine, PM_{10}, naphthalene, anthracene, ammonia, fluorine, PCBs, hydrogen cyanide, di-(2-ethyl hexyl) phthalate	
2072	Cement	CANTABRIA	Valdeolea	CO, CO_2, NMVOC[b], NO_2, SO_2, arsenic, cadmium, chromium, copper, mercury, nickel, lead, zinc, dioxins and furans, benzene, PAHs, chlorine, PM_{10}, total suspended particles, naphthalene, anthracene, vanadium, manganese, cobalt, total organic carbon, ammonia, fluorine, PCBs, antimony, hydrogen cyanide, thallium	
2578	Cement	TARRAGONA	Alcanar	CO, CO_2, nitrous oxide, NMVOC[b], NO_2, SO_2, arsenic, cadmium, chromium, copper, mercury, nickel, lead, zinc, dioxins and furans, benzene, chlorine, PM_{10}, total suspended particles, naphthalene, ammonia, fluorine, PCBs, hydrogen cyanide, di-(2-ethyl hexyl) phthalate	Nitrogen, phosphorus, COD[c]
2580	Cement	VALENCIA	Buñol	Methane, CO, CO_2, NMVOC[b], NO_2, SO_2, arsenic, cadmium, chromium, copper, mercury, nickel, lead, zinc, dioxins and furans, benzene, PAHs, chlorine, PM_{10}, naphthalene, ammonia, anthracene, fluorine, PCBs, di-(2-ethyl hexyl) phthalate	
2581	Cement	BARCELONA	Vilanova i La Geltrú	CO, CO_2, nitrous oxide, NMVOC[b], NO_2, SO_2, arsenic, cadmium, chromium, copper, mercury, nickel, lead, zinc, dioxins and furans, benzene, PAHs, chlorine, PM_{10}, total suspended particles, naphthalene, anthracene, vanadium, manganese, cobalt, total organic carbon, ammonia, fluorine, antimony, di-(2-ethyl hexyl) phthalate, thallium	
2582	Cement	BARCELONA	Sant Feliu de Llobregat	Methane, CO, CO_2, nitrous oxide, NMVOC[b], NO_2, SO_2, arsenic, cadmium, chromium, copper, mercury, nickel, lead, zinc, dioxins and furans, benzene, PAHs, chlorine, PM_{10}, total suspended particles, naphthalene, anthracene, vanadium, manganese, cobalt, total organic carbon, ammonia, fluorine, PCBs, antimony, hydrogen cyanide, di-(2-ethyl hexyl) phthalate, thallium	
2583	Cement	TOLEDO	Yepes	Methane, CO, CO_2, nitrous oxide, NMVOC[b], NO_2, SO_2, arsenic, cadmium, chromium, copper, mercury, nickel, lead, zinc, benzene, PAHs, chlorine, PM_{10}, total suspended particles, fluorine	Total organic carbon
2584	Cement	BALEARIC ISLANDS	Lloseta	CO, CO_2, nitrous oxide, NMVOC[b], NO_2, SO_2, arsenic, cadmium, chromium, copper, mercury, nickel, lead, zinc, dioxins and furans, benzene, PAHs, chlorine, PM_{10}, total suspended particles, naphthalene, anthracene, vanadium, manganese, cobalt, total organic carbon, ammonia, fluorine, PCBs, antimony, hydrogen cyanide, di-(2-ethyl hexyl) phthalate, thallium	
2585	Cement	ZARAGOZA	Morata de Jalón	CO, CO_2, nitrous oxide, NMVOC[b], NO_2, SO_2, arsenic, cadmium, chromium, copper, mercury, nickel, lead, zinc, benzene, PAHs, chlorine, PM_{10}, total suspended particles, naphthalene, anthracene, vanadium, manganese, cobalt, ammonia, fluorine, PCBs, antimony, hydrogen cyanide, di-(2-ethyl hexyl) phthalate, thallium	COD[c]
2586	Cement	ALICANTE	Sant Vicent del Raspeig	Methane, CO, CO_2, NMVOC[b], NO_2, SO_2, arsenic, cadmium, chromium, copper, mercury, nickel, lead, zinc, dioxins and furans, benzene, PAHs, chlorine, PM_{10}, naphthalene, anthracene, ammonia, fluorine, PCBs, di-(2-ethyl hexyl) phthalate	
2898	Cement	TERUEL	Santa Eulalia	PM_{10}	
3036	Cement	BARCELONA	Santa Margarida i Els Monjos	CO, CO_2, NMVOC[b], NO_2, SO_2, cadmium, copper, mercury, nickel, lead, zinc, benzene, chlorine, PM_{10}, manganese, cobalt, ammonia, PCBs, hydrogen cyanide	

				Pollutants released in the last twelve years[a]	
PRTR code	Industrial activity	Province	Municipality	Air	Water
3037	Cement	BARCELONA	Sitges	CO, CO_2, NMVOC[b], NO_2, SO_2, cadmium, chromium, copper, mercury, nickel, lead, zinc, benzene, chlorine, PM_{10}, naphthalene, anthracene, vanadium, manganese, ammonia, PCBs, thallium	
3581	Cement	MALAGA	Antequera	CO, NO_2, SO_2, PM_{10}	
3686	Cement	VIZCAYA	Arrigorriaga	CO, CO_2, nitrous oxide, NMVOC[b], NO_2, SO_2, arsenic, cadmium, chromium, copper, mercury, nickel, lead, zinc, dioxins and furans, benzene, PAHs, chlorine, PM_{10}, naphthalene, anthracene, ammonia, fluorine, PCBs, hydrogen cyanide, di-(2-ethyl hexyl) phthalate	
3687	Cement	GUIPUZCOA	San Sebastián	CO, CO_2, nitrous oxide, NMVOC[b], NO_2, SO_2, arsenic, cadmium, chromium, copper, mercury, nickel, lead, zinc, dioxins and furans, benzene, PAHs, chlorine, PM_{10}, naphthalene, anthracene, ammonia, fluorine, PCBs, hydrogen cyanide, di-(2-ethyl hexyl) phthalate	
3718	Cement	VIZCAYA	Lemoa	CO, CO_2, NMVOC[b], NO_2, SO_2, arsenic, cadmium, chromium, copper, mercury, nickel, lead, zinc, dioxins and furans, benzene, chlorine, PM_{10}, ammonia, fluorine, PCBs	
4861	Cement	GERONA	Boadella i Les Escaules	CO, CO_2, NO_2, SO_2, total suspended particles	Nitrogen, phosphorus, COD[c]
6816	Cement	SANTA CRUZ DE TENERIFE	Santa Cruz de Tenerife	CO, CO_2, NO_2, SO_2, PM_{10}	COD[c]
6828	Cement	LAS PALMAS	San Bartolomé de Tirajana	CO, CO_2, NO_2, chromium, zinc, chlorine, PM_{10}	Arsenic, chromium, nickel, lead
7662	Cement	VALENCIA	Riba-Roja de Túria	Methane, CO, CO_2, nitrous oxide, NMVOC[b], NO_2, SO_2, arsenic, cadmium, chromium, copper, mercury, nickel, lead, zinc, dioxins and furans, PM_{10}	
7946	Cement	MALAGA	Málaga	Total suspended particles	
220	Lime	BARCELONA	Olesa de Bonesvalls	CO, CO_2, nitrous oxide, NMVOC[b], NO_2, SO_2, arsenic, cadmium, chromium, copper, mercury, lead, zinc, dioxins and furans, benzene, PAHs, chlorine, PM_{10}, naphthalene, anthracene, ammonia, fluorine, di-(2-ethyl hexyl) phthalate	Total organic carbon
306	Lime	BARCELONA	Pacs del Penedès	CO, CO_2, NO_2, SO_2, PM_{10}, total suspended particles	COD[c]
645	Lime	CASTELLON	Chilches	Methane, CO, CO_2, nitrous oxide, NMVOC[b], NO_2, SO_2, arsenic, cadmium, chromium, copper, mercury, lead, zinc, dioxins and furans, benzene, PAHs, chlorine, PM_{10}, ammonia, fluorine, dichloromethane	
814	Lime	GERONA	Gerona	Methane, CO, CO_2, nitrous oxide, NMVOC[b], NO_2, SO_2	
822	Lime	GERONA	Argelaguer	CO_2	Nitrogen, phosphorus
984	Lime	GRANADA	Huétor de Santillán	CO, CO_2, NMVOC[b], NO_2, SO_2, nickel, zinc, PM_{10}	
1662	Lime	MADRID	Arganda del Rey	CO, CO_2, NO_2, SO_2, cadmium, mercury, PM_{10}, total suspended particles	
1668	Lime	MADRID	Colmenar de Oreja	CO, CO_2, nitrous oxide, NMVOC[b], NO_2, SO_2, arsenic, cadmium, chromium, copper, mercury, lead, zinc, dioxins and furans, benzene, PAHs, chlorine, PM_{10}, total suspended particles, naphthalene, anthracene, ammonia, fluorine, di-(2-ethyl hexyl) phthalate	
1944	Lime	ASTURIAS	Llanera	CO, CO_2, NO_2, SO_2, arsenic, cadmium, chromium, copper, mercury, nickel, lead, zinc, dioxins and furans, benzene, PAHs, chlorine, PM_{10}, fluorine, PCBs, di-(2-ethyl hexyl) phthalate	
2329	Lime	SEVILLA	Estepa	CO, CO_2, NMVOC[b], NO_2, SO_2, arsenic, cadmium, mercury, lead, zinc, benzene, PM_{10}, total suspended particles, ammonia	
2344	Lime	SEVILLA	Morón de la Frontera	CO, CO_2, nitrous oxide, NMVOC[b], NO_2	
2710	Lime	CANTABRIA	Castro-Urdiales	CO, CO_2, nitrous oxide, NMVOC[b], NO_2, SO_2, arsenic, chromium, copper, lead, zinc, dioxins and furans, PAHs, PM_{10}	
3563	Lime	NAVARRE	Tiebas-Muruarte de Reta	Methane, CO, CO_2, nitrous oxide, NMVOC[b], NO_2, SO_2, PM_{10}	
3564	Lime	SEVILLA	Estepa	CO, CO_2, nitrous oxide, NMVOC[b], NO_2, SO_2, arsenic, cadmium, chromium, copper, mercury, nickel, lead, zinc, dioxins and furans, benzene, PAHs, chlorine, PM_{10}, fluorine	
3664	Lime	GUIPUZCOA	Altzo	CO, CO_2, NO_2, SO_2, PM_{10}	
4095	Lime	ZARAGOZA	Puebla de Albortón	CO, CO_2, nitrous oxide, NMVOC[b], NO_2, SO_2, arsenic, cadmium, chromium, copper, mercury, lead, zinc, benzene, PAHs, PM_{10}, naphthalene, ammonia, di-(2-ethyl hexyl) phthalate	
4515	Lime	ZARAGOZA	Morés	Methane, CO, CO_2, NMVOC[b], NO_2, SO_2, PM_{10}, total suspendes particles	
5218	Lime	SEVILLA	Pedrera	CO, CO_2, NMVOC[b], NO_2, SO_2, PAHs, PM_{10}	
6562	Plaster	MADRID	Valdemoro	CO, CO_2, NO_2, total suspended particles	
6581	Plaster	BURGOS	Valle de Oca	CO, CO_2, NO_2, SO_2, PM_{10}	
7034	Plaster	MADRID	San Martín de la Vega	Methane, CO, NO_2, SO_2, PM_{10}	
7484	Plaster	GERONA	Beuda	CO, CO_2, NO_2, SO_2, total suspended particles	
1558	Magnesium oxide	LUGO	O Incio	CO, CO_2, NO_2, SO_2, PM_{10}	
1763	Magnesium oxide	NAVARRE	Esteríbar	CO, CO_2, NO_2, SO_2, PM_{10}	

[a]Pollutants released in the period 2001-2012 and included in the IPCC database.
[b]Non-methane organic compounds.
[c]Chemical oxygen demand.

Supplementary data, Table S6.

PRTR Code	Releases to air (IPPC, 2009) (kg/year)																																		
	A1[a]	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12	A13	A14	A15	A16	A17	A18	A19	A20	A21	A22	A23	A24	A25	A26	A27	A28	A29	A30	A31	A32	A33	A34	A35	TOTAL
141	8			9	193	7			566		16	17300	27	727000000	156	0.0002	4		25	3310	1890000	77	17		520000	1580000	12000		0.00003	45					76	731023837
142		11700	10	10	964	5	926	131	1980	5	14	37800	7	463000000	362		109	5	5		305000		6	5260	2180	1480000	5950	6610	0.00002	6	7			5	19	464859076
143				5	0.01	2			261		4	1920	15	873000000	128		3		4	17300	504000		4	49	4200	2030000		30000		4				11	875587910
144	3	8498	1	1	671	0.1	57042	91	35	0.2	0.4	26306	0.2	284374000	41	0.0001		0.4	0.1		569449	33	0.4		12215	617132	1617	1796	0.00001	1	2	33		0.2	36	285669006
145	4	8510	4	4	700	3	18800	95	2310	1	7	27400	12	337000000	130	0.0001	79	7	6		185000	34	8	3820	24600	680000	29100	32400	0.00001	20	3	34		4	45	338013140
220	0.001	301		2	472	5			4307		5	9365	12	63016030	27		0.02		5		25199	50		4431	423	22909	11800		7.6E-07	6		3			5	63095358
296	10	24993	10	11	2055	9	55096	280	6776	4	21	80534	35	975193000	383	0.0003	233	20	17		2144151	100	22	11219	674214	1578528		41830	0.00001	59	9	101		11	132	979813863
306														112840490							737				26917	182470	6461	6461								113063536
645		256		0.3	426	0.1			3890		138	542	4	47900000	25		59		0.6	171	12600			393	26600	37400	2290		0.0001	2			13		9	47984819
814												63		51365882						63	8643			42	454	71369										51446516
822														72368085																						72368085
984												2020		18600000							11200				5880	27200	3550									18649850
1082																												471								471
1494				0.8		3			3270		9	429	5	283000000	130		1		1	3860	199000		2	25	57	559000		9050		0.7					12	283774856
1496	4	9400		4	774	3		105	554		8	15100	13	353000000	2	0.0001	88		6		621000	37	8	4200	7500	872000	26500		0.00002	22		38			50	354557416
1497	6	15500	7	7	1280	5	49900	174	4220	2	13	50100	22	584000000	238	0.0002	145	12	11		437000	62	14	6980	5920	1110000	24500	27200	0.00003	37	6	63		7	82	585733513
1512	7	661	7	7	1310	5		178	4300	2	14	51200	22	600000000	243	0.0002	0.7	13	11		1470000	63	14	7130	46700	1010000	44700	49700	0.00003	37	6	64		7	84	602686486
1558														116000000							65000				720000	153000										116938000
1570		14500			218		47000		200		25	4700	6	334000000			34	9			477000	32			600	662000	10400	11500	3.0E-06							335228225
1572	5	13200	5	5	47	5		127	2470	1	3	1360	2	448000000	710	0.0001	106	48	32		743000	45	2	5080	12900	1130000	28300	28300	7.6E-07	8	3	46		1	60	449965869
1573	6	4550			504	0.7		166	6500	2	3	873		569000000	407		138		4		215000	59			124000	861000	8020		0.00001		1	60		4	6	570221303
1574	1	26700	3	3	244	0.7	14500	33	864	0.5	0.5	9570	0.8	121000000	134	0.00003	28	3	3		228000	12	0.5	1330	31700	431000	37400	41600	0.00003	0.8	1	12		2	16	121823162
1662														96745000							87600				50700	30400	18800	3020								96935520
1668	0.00004	9		0.1	13	0.1			123		0.1	267	0.4	2141000	0.8		0.0004		0.1		262	1		135	20156	1303	336	991	2.2E-08	0.2		0.1		0.1	2164598
1757	0.2	758							3190			4970	13	730000000	376	3.4E-06	105				373000	100			17600	1610000		21000	0.00001							732031112
1758		11900		8	979	1		133	2690		14	38400	2	433000000	183				1		1910000		17		54600	1410000	4870			11				33	436433843
1759		555		1	253		7970	177	14100	4	35	5760	4	988000000	109	0.0001	1	22	2		1410000	5	28	5180	85900	1820000	28500	31600	2.0E-06	112	7		3	12	991410340
1760			9	7		2				4	8	19000	8	485000000		0.01		11		15320	113500	78		18000	946000	436000				15	3			11	486547975
1763														327000000							68700				6400000	2070000	38400									335577100
1914	7	3800		8	175	4		24	5290		30	34600	20	462000000	110		49		4		1020000	32	43	940	447000	674000	65600		0.00001	179		9			166	464252090
1915	7	15800		8	1300	5		176	4272		13	50800	22	576000000	242	0.0002	147		11		1060000	63	14	7070	689000	1870000	80300		0.00003	37		64			83	579779434
1916	9	21000		10	1730	7		235	5700		18	67700	30	754000000	322	0.0002	196		15		1780000	84	19	9430	1620000	2550000	16700		0.00003	49		85			111	760073449
1944				5	892	8			28		3		5	58300000	61		237		0.2		86500		4		488	6660	5630			5					134	58400660
2072	5	172	8	8	852	3	46300	139	1590	13	8	39900	4	468000000	146	0.0001	115	10	12		3440000	49	7		715000	630000	16800	23500	0.00001	5	8			3	65	472914722
2329		96		0.02	3	0.003						1080000		22800000					0.04		37800				85000	1890		66500		0.1				0.5	24071290
2344												28200		172000000							49500			5680		140000									172223380
2578		6228		12	803	9		308	4418		7	27187	27	1051890479	102	2.0E-06			19		1319415	11	25	12334	3550	2427336	49063	83471	0.00004	27		59			50	1055824940
2580	5			6	342	4			1450		11	174000	18	326000000	365	0.0001	24		3	2630	1260000	51	12		346000	1050000	96500		0.00002	30					88	328931539
2581	0.2	116	0.2	0.2	3	0.2			140	0.1	0.8	1659	0.4	25344000	8		5	0.4	0.4		118914	2	0.5	231	218933	35997	3485	3873	8.0E-07	2	0.2	2		0.2	3	25727377
2582	0.003	221	0.4	0.4	69	0.3	2151	11	265	0.2	0.8	3144	1	136321000	139	0.00001	9	0.8	0.7	1329	198138	4	0.9	438	34469	202422	3253	3253	1.2E-06	2	0.4	3		0.5	5	136770331
2583				14	0.01	3			3880		15	1130	8	782000000	1230		2		29	10200	575000		8	50	2640	1010000		30400		70					43	783634722
2584	2	4580	2	2	376	2	42500	51	1240	0.7	4	14800	6	166000000	70	0.0001	43	4	3		521000	18	4	2050	291000	583000	9710	37900	0.00001	11	2	19		2	24	167508425
2585	69	9920	5	4	823	0.5		179	7240	3	5	24400	3	479000000	192	2	83	16	1		2460000	93	3	13500	815	888000	22100	15400		12	7	310		11	30	482443224
2586	9			9	198	7					18	13200	30	702000000	664	0.0002	14		11	3290	755000	85	19		254000	1250000	35900		0.00001	50					96	704312602
2710				4							7	13.4	18	89644000			0.02				93252				6887	53480	860		1.1E-06	9					7	89798537
2898																											1240									1240
3036		4404			161	5		35	3053	6	11	40265		897454926		0.002		14	0.9		4852793		8		35147	1772243	102590			46					65	904265774
3037	0.02	1637			289	0.8			575		4	24055	7	635199940		0.01		5	15		3193768	16	4		187155	819265	77659			7	3			5	35	639504445
3563												382		144000000						382	265000			764	11800	103000	8980								144390308
3564				5	0.2	0.1			1600		10	21000	23	148000000	491		0.004		0.4		26200		2	1260	8340	49400	48900		0.00001	3				7	148157242
3581																					1230				785	564	316								2895
3664																					165				5228	1436									6829
3686	0.02	8950		4	73	1		100	2482		7	6677	49		114	0.0001	0.1		4		1831638	36	27	4018	252107	1262259	18975		0.00001	15		36			47	3387620
3687	0.0000002	726		1	1	0.3		6	217		4	4233	4		75	0.0001	4.1E-08		0.3		1139179	0.0001	3	4360	655522	1624566	12906		1.5E-06	1		9			50	3441864
3718		12082		6		1			612		16		18	429042000	3	0.00001			7		3063733		6		76148	763806	2364		0.00002	4					64	432960869
4095		457		4	716	7					7	14200	19	95400000			0.02		8		169000	76		6730	15600	104000	17900			10		4		7	95728746
4515												9250		35300000						243	28100				486	42200		709000							36089279
4861														2108680							30800				8300	2228		492							2150500
5218												477		44300000			0.001				406000				1130	2670	6410								44716687
6562														24236000							63700					18600		82200								24400500
6581														20400000							14300				76500	43900	16800								20551500
6816														2340000							431				2630	8190	6830								2358081
6828									2793				5	1701563							22257					7537	1157							74	1735386
7034																				2	2102				59	571	0.1								2734
7484														7320653							914				31779	12519		2718							7368583
7662				0.02		0.02					0.02	203	0.01	1070000					0.02	24	179		0.02	13	521	1080	12200		6.2E-09	0.1				0.03	1084220
7946																												186							186
TOTAL	166	242181	69	195	19911	127	342185	2955	109451	49	538	2086455	530	19254716728	8119	2	2059	201	277	58124	43960049	1407	352	142142	15906033	42485530	1084621	1402422	0.0005	963	69	1052	13	66	1956	19362576996

[a]A1: Anthracene. A2: Ammonia. A3: Antimony. A4: Arsenic and compounds. A5: Benzene. A6: Cadmium and compounds. A7: Total organic carbon. A8: Hydrogen cyanide. A9: Chlorine and inorganic compounds. A10: Cobalt. A11: Copper and compounds. A12: Non-methane volatile organic compounds. A13: Chromium and compounds. A14: CO_2. A15: Fluorine and inorganic compounds. A16: PCBs. A17: PAHs. A18: Manganese. A19: Mercury and compounds. A20: Methane. A21: CO. A22: Naphthalene. A23: Nickel and compounds. A24: Nitrous oxide. A25: SO_x/SO_2. A26: NO_x/NO_2. A27: PM_{10}. A28: Total suspended particles. A29: Dioxins and furans. A30: Lead and compounds. A31: Thallium. A32: Di-(2-ethyl hexyl) phthalate. A33: Dichloromethane. A34: Vanadium. A35: Zinc and compounds.

Supplementary data, Table S7.

	Releases to water (IPPC 2009) (kg/year)													
PRTR Code	W1[a]	W2	W3	W4	W5	W6	W7	W8	W9	W10	W11	W12	W13	TOTAL
141														0
142														0
143		81							13		115			210
144														0
145														0
220		63												63
296		110	4343	0.4			0.4		84		598		0.8	5136
306		34												34
645														0
814														0
822									9		32			41
984														0
1082														0
1494		16							2		12			30
1496														0
1497														0
1512														0
1558														0
1570														0
1572														0
1573		129						57	69		23	4	0.6	283
1574														0
1662														0
1668														0
1757														0
1758		675												675
1759														0
1760						1201								1201
1763														0
1914														0
1915		717				2150								2867
1916														0
1944														0
2072														0
2329														0
2344														0
2578						7884			366		1422			9672
2580														0
2581														0
2582														0
2583		51												51
2584														0
2585						266								266
2586														0
2710														0
2898														0
3036														0
3037														0
3563														0
3564														0
3581														0
3664														0
3686														0
3687														0
3718														0
4095														0
4515														0
4861						4			0.1		0.3			4
5218														0
6562														0
6581														0
6816		370												370
6828	0.03	1767			0.04		2			0.04		0.03		1769
7034														0
7484														0
7662														0
7946														0
TOTAL	0.03	4014	4343	0.4	0.04	11504	2	57	543	0.04	2202	4	1	22672

[a]W1: Arsenic and compounds. W2: Total organic carbon. W3: Chlorides. W4: Copper and compounds. W5: Chromium and compounds. W6: Chemical oxygen demand. W7: Phenols. W8: Fluorides. W9: Total phosphorus. W10: Nickel and compounds. W11: Total nitrogen. W12: Lead and compounds. W13: Zinc and compounds.

Supplementary data, Figure S1.

PRTR Code	Year	PRTR Code	Year
141	1951	2329	1974
142	1931	2344	1983
143	1926	2578	1968
144	1917	2580	1922
145	1967	2581	1926
220	1952	2582	1967
296	1919	2583	1911
306	1967	2584	1966
645	1989	2585	1932
814	1959	2586	1927
822	1969	2710	1945
984	1990	2898	1994
1082	2000	3036	1902
1494	1909	3037	1903
1496	1961	3563	1969
1497	1924	3564	1988
1512	1915	3581	2001
1558	1963	3664	1991
1570	1973	3686	1963
1572	1977	3687	1901
1573	1978	3718	1917
1574	1967	4095	2000
1662	1984	4515	1995
1668	1984	4861	1980
1757	1964	5218	1968
1758	1952	6562	1990
1759	1972	6581	1964
1760	1903	6816	1958
1763	1945	6828	1957
1914	1898	7034	1975
1915	1953	7484	1989
1916	1961	7662	1994
1944	1941	7946	1994
2072	1930