

090201a**Illegal incineration of domestic or municipal wastes***Process description*

Domestic waste is assumed to be combusted frequently in solid fuel household heating systems or at open air in the vicinity of the households.

Abatement measures

none

Plant data/European situation

No specific data on the use of domestic waste in household room heating facilities are available. The relevance of this source will vary strongly with the distribution of solid fuel heating systems; further, it may be influenced by other factors like the price for legal waste collection. Open air burning of waste is more likely to occur in rural regions especially in countries without effective waste collection systems.

Activity data

To get an activity rate for illegal waste incineration (shown 090201a—Table 3) the annual amounts of municipal solid waste produced in every country were taken and multiplied with 0.25 (assumption: 0.25 % of municipal waste is burned illegally).

Emission factors

Only three countries provided data on illegal domestic waste incineration (Switzerland and Germany) and open burning of municipal waste (Belgium and Switzerland) shown in 090201a—Table 2. The values for illegal domestic waste incineration were gained by measurements.

Due to the small data base no default emission factor was selected. Two separate emission estimations were carried out instead with the Swiss and with the German factor.

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Emission estimation

On the basis of the Swiss and German emission factors and the activity rates (see 090201a—Table 2, 090201a—Table 3) a pair of standardised annual PCDD/F emissions were derived. The geometric mean of these values was selected as annual estimate for dioxin emissions from illegal domestic waste incineration (see 090201a—Table 4). For all 17 countries considered the following annual totals are obtained (090201a—Table 1):

	TOTAL
Re-evaluation, Swiss factor	1138.0
Re-evaluation, German factor	26.6
Re-evaluation, geom. mean	174.0

090201a—Table 1 Summary of re-evaluated typical PCDD/F air emissions [g I-TEQ/a] for illegal incineration of domestic or municipal wastes

Conclusions/recommendations

The illegal incineration of domestic or municipal wastes is difficult to assess; yet it appears to be of moderate significance for the total emission of PCDD/F in Europe.

As all calculations in this chapter are based on a small data base with a quite arbitrarily chosen factor for calculating the national activity rates considerable uncertainties are inevitable. First of all emission factors calculated on a larger data base are required to get more reliable estimations. Apart of this more accurate activity data would be very helpful but presumably they are very difficult to obtain. Anyway, illegal incineration of domestic or municipal wastes will probably remain a constant dioxin source in Europe.

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	Flue gas conc. [ng I-TEQ/m ³]			Emission factors [µg/t]			Remark
	typ	min	max	typ	min	max	
illegal domestic burning							
CH				3230			based on measurements using mixed fuel containing waste [29]
D		0.19	16.6	75.5			based on measurements with wood/waste mixtures
Open burning of MSW							
B				1000			
CH				450			

090201a—Table 2 PCDD/F air emission factors for illegal incineration of domestic or municipal wastes from national dioxin inventories

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illegal domestic burning		
	waste production *)	burned illegally (0.25 % of total)
	[kt/a]	[kt/a]
A	2800	7
B	3500	8.75
CH	3700	9.25
D	25000	62.5
Dk	2600	6.5
E	13300	33.25
F	20000	50
GR	3150	7.875
I	17500	43.75
IRL	1100	2.75
L	180	0.45
N	2000	5
NL	7700	19.25
P	2650	6.625
S	3200	8
SF	2500	6.25
UK	30000	75
TOTAL	140880	352

*) according to TNO study < 1 >

090201a—Table 3 Activity rates related to illegal incineration of domestic and municipal wastes

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	Annual emissions [g I-TEQ/a]		
	German factor	Swiss factor	geom. mean
A	0.5	23	3
B	0.7	28	4
CH	0.7	30	5
D	4.7	202	31
Dk	0.5	21	3
E	2.5	107	16
F	3.8	162	25
GR	0.6	25	4
I	3.3	141	22
IRL	0.2	9	1
L	0.0	1	0
N	0.4	16	2
NL	1.5	62	10
P	0.5	21	3
S	0.6	26	4
SF	0.5	20	3
UK	5.7	242	37
Total	26.6	1138	174

090201a—Table 4 Comparison of PCDD/F air emission estimates [g I-TEQ/a] for illegal incineration of domestic and municipal wastes (reference period: 1993-1995)

European Dioxin Inventory - Results

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References to 090201a

see national inventories for further information

- 1 Ir. L. P. M. Rijpkema (1993) : The Impact of a Change in EC Legislation on the Combustion of Municipal Solid Waste. TNO, Apeldoorn, NL (Ed.) 95 p."