

030326**Other - metal reclamation from cables***Process description***Burning of cables**

Cable burning is the process in which copper and lead are recovered by burning the insulating material from electricity and electronics cables. In this process, all ingredients for the forming of dioxins are present, i. e. carbon (sheath), chlorine (PVC or mould-resistant agents) and a catalyst (copper).

The burning is done batchwise in simple furnaces lined inside with firebrick. In the furnace, the possibly pre-shredded cables are set afire (using oil or gas). The combustible substances present (grease, oil, paper, jute and the like) then keep the fire going. The lead present melts and is drained off. After the process, the copper core and the steel strip (of cable armouring) are scooped from the furnace with the combustion residue.

In the illegal burning of cables, there is usually no installation at issue. The cables are set afire either on the ground or in a cask. By placing the stake on a small elevation or by making holes in the bottom of the cask, the lead can run off and be collected. Illegal burning specifically involves cables from cars and from building and demolition waste.

Burning of electromotors, brake blocks and the like

Processes related to cable burning are the burning of electromotor windings, the burning of coatings of instruments, the burning of brake blocks, and the like. These processes are also carried out in a furnace at 300 to 400 °C, with incineration of the generated gases. The furnace temperature is usually set by a separate burner and not by the burning of the material itself. Particularly in the burning of electromotors, temperature control is important, as the motors should keep their original form. Therefore, the process control of electromotor burning is better monitored than that of cable burning.

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Abatement technologies:

The gases arising from the burning are incinerated at temperatures of 800 °C or higher in a thermal after burner, and then emitted via a wet scrubber.

Plant data/European situation

While in some countries (D, NL) all existing facilities were identified and have already been shut down no specific information is available for other countries. It is likely that cable burning is a common practice in a number of member states since the process can be done in very simple facilities.

Activity data

Activity data (shown in 030326—Table 3) were available from the Dutch national inventory only. Apparently there do not exist any data on production statistics.

Emission factors

Emission factors for metal reclamation from cables as reported by the national dioxin inventories are shown in 030326—Table 1. Solely the Dutch inventory provides flue gas concentrations from measurements at cable burnig facilities and only the Dutch and Swiss inventories report on emission factors for this kind of plant. In the other countries either no data are accessible or there do not exist any cable burnig plants (e.g. in Germany).

Due to the few data no default emission factors were derived to be used for emission estimations.

Emission estimation

As no default emission factor was selected (see above) no standardised annual PCDD/F emissions were derived. The values presented in 030326—Table 3 were

taken from the national inventories or publications of Switzerland, Denmark and The Netherlands.

In spite of the rather low annual emissions for metal reclamation from cables reported by Switzerland, Denmark and The Netherlands the flue gas concentrations and the emission factors of the Dutch inventory (see 030326—Table 2) indicate that this process can be significantly relevant for the annual European dioxin emissions.

Conclusions/recommendations

Concerning cable burnig better basic data about the amounts of annually burnt cables and numbers of this kind of installation in the 17 countries are required to evaluate the relevance of this process. In view of the high flue gas concentrations occasionally found at operating facilities and the severe soil contamination at former plant sites all installations should be closed. Additionally measurements at some of these plants should be carried out to get more reliable estimates.

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	Flue gas conc. [ng I-TEQ/m ³]			Emission factors [µg/t]			Remark
	typ	min	max	typ	min	max	
A							
B							no information available; some polluted sites are known
CH				17 µg/t			calculated from EF's for dust and HCl; emission 1990: 0.128 g I-TEQ
D				0	0	0	no activity rates
Dk							no information about basic data
E							
F							
Gr							
I							
Irl							
L							
N							
NL		0.6	254		3.3	500	additional measurements recommended
P							
S							no information whether any plants in operation
Sf							
Uk							

030326—Table 1 PCDD/F air emission factors for metal reclamation from cables as used in the national dioxin inventories

	Activity rates [kt/a]	
	Inv.	stat.
A		no data
B		no data
CH		no data
D		no data
Dk		no data
E		no data
F		no data
Gr		no data
I		no data
Irl		no data
L		no data
N		no data
NL	ca. 4	no data
P		no data
S		no data
Sf		no data
Uk		no data

030326—Table 2 Activity rates related to metal reclamation from cables

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	Annual emission
A	
B	
CH	0
D	
Dk	0.13
E	
F	
Gr	
I	
Irl	
L	
N	
NL	1.52
P	
S	
Sf	
Uk	

030326—Table 3 Comparison of PCDD/F air emission estimates [g I-TEQ/a] for metal reclamation from cables

References to 030326

see national inventories for further information