

Variation of the composition of fly ash from the municipal waste thermal treatment plant

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Residues from air pollution control system from the newly opened waste thermal treatment plant were analysed. Samples were collected from post-combustion ash after SNCR system (A), economizer (B), reactor after hydrated lime and activated carbon injection (C) and from bag filters (D) in two technological lines.

The content of major components is variable, depending on the stage of the treatment and only partly on the technological line (Tab. 1).

Tab.1 Content of major components in produced fly ash

	Line	A	B	C	D
Si	1	59.3	16.8	36.0	17.6
	2	55.7	16.7	34.1	11.2
Ca	1	16.2	26.8	31.3	36.9
	2	19.0	27.3	31.5	37.6
LOI	1	6.8	25.1	10.6	24.7
	2	5.8	26.7	11.2	24.6

Content of minor or trace components was compared as C_X/C_{Al} ratio, where C_X is a content of element and C_{Al} content of Al in the sample calculated on the LOI-free basis. For numerous elements (e.g. REE) differences in the C_X/C_{Al} ratio for different samples are relatively low; slight increase in the ratio in B and D was noted for Cu, Mo, Ba, Sr, Nb and Ta. For several elements such as: Hg, Se, As, Zn, Pb, Cd, Sb, Bi the C_X/C_{Al} ratio is significantly higher for samples B and D compared with A and C. All these elements are characterized by high volatility (relatively low boiling point temperature).

Differences in chemical composition are related mostly to mineral composition and grain size of ash. Samples A and C contain mainly quartz and are more coarse grained what reduce amount of trace elements incorporated into minerals or adsorbed on grains surface.

The study was supported by Polish National Science Centre NCN grant No UMO-2014/15/B/ST10/04171.