

SPHERICAL FLY ASH PARTICLES FROM OIL SHALE FIRED POWER PLANTS IN ATMOSPHERIC PRECIPITATIONS. POSSIBILITIES OF QUANTITATIVE TRACING

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Concentration of spherical particles in oil shale fly ash and their deposition onto areas surrounding Narva power plants and far (background) sites in South-eastern Estonia was studied. It was found that due to their relatively low background values, spherical particles are more sensitive indicators of oil shale combustion emissions than chemical components, especially calcium, of oil-shale ash. As the concentration of spherical particles in fly ash was determined to be highly variable depending on combustion technologies and regimes, their use for quantitative tracing is complicated in practice. The same variability, however, leaves us a chance to refine the backward-tracing methods for fly ash, distinguishing different types of combustion devices by their source signatures. It was found that wintertime (snow-based) field campaigns are preferred to the warm season (based on rainwater sampling) ones owing to their relatively lower background concentrations, but both campaigns are needed to quantify yearly influxes of fly ash to the ecosystems.

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