

## **Trends of carbonylic compounds measured in Lahemaa monitoring station**

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Both antropogenic and biogenic carbonyls are known as precursors of ozone and secondary organic aerosols in the atmosphere. Monitoring strategy of European Monitoring and Evaluation Programme (EMEP) lists carbonyls to be monitored in EMEP level II monitoring sites at least twice a week. In Estonia Lahemaa monitoring station is specified as level II station and therefore monitoring of carbonyls is required in that site. Monitoring of carbonyls started at Lahemaa already in 2008, when five different compounds were analyzed from ambient air samples. Since 2010 the list of analyzed carbonyls were extended to 10 compounds. Currently concentration of acetaldehyde, acrolein, acetone, crotonaldehyde, benzaldehyde, butanal, isovaleraldehyde, valeraldehyde, formaldehyde, propanal is measured in Lahemaa station. The DNPH (2,4-dinitrophenyl hydrazine) sorbent tubes with derivatization directly in sampling cartridges and HPLC reverse column is used for sampling and analysis of aldehydes. The method is very sensitive and specific for carbonyls and it is therefore recommended to use for sampling points where low levels of aldehydes are expected as in rural site of Lahemaa EMEP station.

Levels of the carbonyls are higher during summer months. Highest levels of aldehydes were measured so far during the 2010 extremely hot summer. The acetaldehyde levels were highest during 2009 summer. In comparison with some other EMEP sites in France and Spain, the levels of carbonyls are somewhat higher in Lahemaa monitoring site. Formaldehyde level could be affected by local oil shale industry and phenol-formaldehyde resin production not too far from Lahemaa monitoring site. This is supported by the elevated results of formaldehyde concentration measured in Narva and Kohtla-Järve urban monitoring sites.