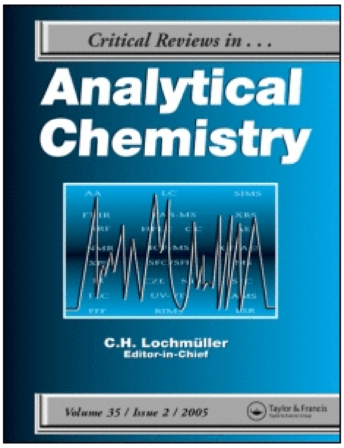

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SNOW COVER INVESTIGATIONS - DATE ABOUT AIR QUALITY

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The problem of near-surface air quality in urbanized territories, and most of all - that of heavy metals in it, is actual up to now. Traditional methods of its evaluation using stationary or mobile air analysis stations often does not yield desirable results. This is, firstly, because air composition is quickly changing system. That's why lasting investigations of air quality are needed. Secondly, more dense net of observation stations is necessary. And this is already expensive. Besides, the spectrum of metals being explored is narrow. That's why objective information about air quality during longer period is very rare. One of non-traditional ways of solution of this problem is geochemical exploration of snow cover in the end of winter. It is especially effective in those countries where it lies for a longer time period.

In this respect the winter of 1995-1996 in Lithuania was very favourable. The snow cover formed in November 1995 didn't thaw until spring (end of March, 1996). This enabled to collect 51 sample of snow in Alytus from the territory of almost 34 km^2 before the beginning of intensive thaw. Nearly regular grid of sampling points was chosen at a scale 1 : 100 000. The scheme of the town was also taken into account.

Each snow sample consisted of 9 subsamples that were collected from 9 sites (20 cm × 20 cm x 9 = 0,36 km^2) and through the whole depth of the snow cover. The snow was placed to polyethylene bags and transported to laboratory. It was there at once transferred to plastic buckets where it was thawed in room temperature. The volume of each such sample of thawed water ranged from 21 to 25 litres. Later it was filtered (particularly dense filter paper for all fine and finest precipitates).

The collected dust was mineralized together with filter and weighed. It was analyzed by DC Arc Emission Spectrometry for Ag, Al, B, Ba, Co, Cr, Cu, Ga, La, Li, Mn, Mo, Nb, Ni, P, Pb, Sc, Sn, Sr, Ti, V, W, Y, Zn and Zr. It enabled to compile maps of distribution in dry fall-outs: in micrograms of elements per gram of dust and to evaluate the intensity of atmospheric load: grams of elements in square kilometer per day. This could be realized because both the time of exposition of snow cover, and dust concentration in square unit, as well as element concentration in dust were known.

The filtrate was analyzed by AAS for Co, Cr, Cu, Mn, Ni, Pb and Zn. This enabled to prepare supplementary maps of distribution of dissolved fraction in snow water: in milligrams per cubic meter of snow water.

Thus atmogeochemical evaluation of Alytus was realized. Here are some results of investigation: 1) **Pb** median concentration <u>in dust</u> collected from snow (1300 mg/kg) <u>exceeds</u> its median quantity <u>in topsoils</u> of Alytus (17 mg/kg, number of observations - 430) ***76 times***, **Ag** (4.7/0.074) - ***64***, **Zn** (1600/32) - ***50***, **Cu** (360/9.4) - ***38***, **Sn** (58/2.1) - ***28***, **Ni** (350/13) - ***27***, **V** (600/30) - ***20***, **Mo** (6.8/0.66) - ***10***, **Cr** (200/36) - ***5.6***, **P** (3000/690) - ***4.3***, **Co** (14/3.7) - ***3.8***, **B** (46/25) - ***1.9***, **Ba** (600/320) - ***1.9***, **Mn** (680/370) - ***1.8***, **Sr** (150/85) ***-1.8 times***; 2) The intensity of atmospheric load in Alytus (<u>in dry fall-outs</u>) for **P** amounts *to 1070 grams*, **Zn** - 620, **Pb** - 440, **Mn** - 312, **V** - 226, **Ba** - 187, **Ni** - 127, **Cu** - 111, **Cr** - 71.2, **Sr** - 54.6, **Sn** - 19.5, **B** - 16, **Co** - 5.3, **Mo** - 2.58, **Ag** - 1.97; 3) Median **Zn** concentration <u>in dissolved fraction of snow-water</u> - 43.3 mg per cubic meter, **Pb** - 10, **Cu** - 4.63, **Ni** - 4.15, **Cr** - 2.91, **Mn** - 0.23, **Cd** - 0.21, **Co** - 0.16.