

THE IMPACT OF LONG-TERM AIR POLLUTION TO THE SENSITIVE NATURAL ECOSYSTEMS: A CASE STUDY

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ABSTRACT

During the recent 40 years the bogs in the north-east of Estonia have suffered the strong alkaline air pollution due to use of *Kukersite* oil shale in thermal power plants and cement production. The deposition of oil shale fly ash (composition is nearly similar to limestone) causes the rise of pH of naturally acidic bog water and adds a lot of nutrients to the environment, which is naturally poor of nutrients. Therefore the acidophilus (incl. *Sphagnum*) species have disappeared and several new species (typical for mineral land) appeared. The look of bog has been changed, mainly due to intensified growth of trees (mainly *Pinus sylvestris*). The growth of peat layer has been disturbed and replaced by biochemical destruction of peat. At least 100 km² of bog are no longer accumulators of airborne carbon and changed to the sources of carbon dioxide. In this paper are presented the quantitative relations between the frequencies of species, cumulative alkaline pollution loads and bog water pH.