

## **Use of geological and ecogeochemical data in assessing metal emissions from the Cu-Ni industry in Russia**

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Published estimates for heavy metal emissions from the Cu-Ni industry on the Kola Peninsula in NW Russia are examined in the light of: a) Official emission figures for 1993 and 1994, b) Modelled emissions based on calculated dry and wet deposition estimates based on data from snow and rain sampling in 1994, c) Chemical data on the composition of the ores processed. The modelled emissions, official emission figures and chemical data are compatible for Ni, Cu and Co and show that previous estimates underestimated the emissions of Ni and Cu (but within the same order of magnitude). Comparison of published estimates with the modelled emissions and chemical data for trace elements in the ores shows that the published figures overestimated the emissions of certain trace metals by up to several orders of magnitude, in some cases exceeding the calculated total input of these metals to the plants. These conclusions have implications for estimates of emissions from the Cu-Ni industries in the Noril'sk area and from the metallurgical industry in the Urals; published estimates of these emissions have neglected the implications of information on the nature of the ores being processed (plants in the Urals) and on the chemistry of the ores (both the Urals and at Noril'sk). Ore geologists should ensure that society recognises the importance of their data in environmental matters.