

# Chlorine and Alkali Geochemical Halos in the Footwall Breccia and Sublayer Norite at the Margin of the Strathcona Embayment, Sudbury Structure, Ontario

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## Abstract

The Ni-Cu-platinum-group element ores in the sublayer and footwall breccia of the Sudbury structure have distinctive geochemical halos. In the Fraser mine, F/Cl ratios of the sublayer rocks appear to decrease, Na<sub>2</sub>O/K<sub>2</sub>O ratios of the footwall breccia samples decrease, and Cl in both units increases with proximity to mineralization. These halos are interpreted to result from interaction of residual magmatic fluids with host rocks, which altered the host-rock mineralogy and precipitated Cl-bearing minerals. The results of this study, together with the results of previous studies, suggest that most ores at Sudbury, including sublayer- and footwall breccia-hosted contact ores and Sudbury breccia-hosted footwall ores, are surrounded by Cl and possibly alkali halos and that these geochemical signatures may be used to identify rocks that are proximal to mineralization.

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