Regularly Interstratified Chlorite/Vermiculite in Contact Metamorphosed Red Beds, Newark Group, Connecticut Valley

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Abstract: A regularly interstratified chlorite/vermiculite occurs in red beds of the East Berlin Formation (Early Jurassic age) in the Connecticut Valley. The mineral is restricted to a 2.5-m wide zone of contact metamorphosed strata adjacent to and underlying the Hampden Basalt. Chemical and X-ray powder diffraction data indicate that the chlorite/vermiculite formed in response to lava-induced elevated temperatures and the availability of magnesium in the muds during and shortly after emplacement of the lava flow. Near the contact, hydrothermal fluids originating from the lava and from the synchronal weathering of basalt fragments by superheated pore waters provided a source of Mg. Further from the contact, magnesium was primarily derived from the thermal dissociation of dolomite. K_2O concentrations and the distribution of clay minerals in the red mudstone suggest that the interstratified chlorite/vermiculite formed from preexisting illite or vermiculite as potassium was released and brucitic sheets were incorporated into interlayer positions.

Key Words: Chlorite • Contact metamorphism • Hydrothermal • Mixed-layer • Red beds • Vermiculite

Clays and Clay Minerals; February 1980 v. 28; no. 1; p. 1-11; DOI: 10.1346/CCMN.1980.0280101

Clay Minerals Society (www.clays.org)