

Walter E. Parham

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OF HONG KONG**

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HALLOYSITE-RICH TROPICAL WEATHERING PRODUCTS OF HONG KONG

WALTER E. PARHAM

Minnesota Geological Survey, and Department of Geology and Geophysics,
University of Minnesota, Minneapolis, Minnesota

ABSTRACT

Rock weathering products formed under humid tropical conditions in Hong Kong typically are rich in the clay mineral halloysite. The parent rock types studied consist primarily of granite and rhyolite porphyry, and commonly weather to depths in excess of 100 feet. Feldspars change first to a material that probably corresponds in composition to allophane. This weathering product occurs as small, tapered projections and as flame-shaped sheets that project upward from the feldspar surfaces. Tubular halloysite develops from the flame-shaped materials as weathering progresses. It is suggested that small pseudo-hexagonal kaolinite flakes slough off the outer surface of halloysite tubes and act as seed crystals for the site of further kaolinite growth.

Comparison of the modern rock weathering products of Hong Kong with the much older ones formed under similar conditions in Minnesota, U.S.A., suggest that the tapered projections and flame-shaped sheet material is unstable and with time is converted to other mineral phases. The minor amounts of halloysite present in the older weathering products of Minnesota suggest also that halloysite is converted to platy kaolinite in relatively short periods of geologic time.

INTRODUCTION

Chemical weathering of igneous and metamorphic rocks under tropical conditions took place in Minnesota, U.S.A., during the latter part of the Mesozoic era, developing a kaolinitic residuum up to 100 feet in thickness. The clay minerals of the residuum consist mostly of kaolinite with minor amounts of halloysite. Halloysite seems to have formed directly from the weathering of potassium feldspars, and some is preserved on partly altered feldspar cleavage surfaces toward the base of the weathered zone. Higher in the weathering profile, halloysite is sparse or absent, whereas platy

