The major igneous phosphate deposit in Phalaborwa was discovered in 1904. The establishment of the Phosphate Development Corporation (Foskor) in 1951 catalyzed the development and growth of phosphate mining and phosphate fertilizer manufacturing in South Africa as well as associated businesses. This keynote address covers four major topics: 1) chemical and mineralogical properties of major phosphate deposits in South Africa, 2) mining and beneficiation practices, 3) technical challenges and evolution of processing technologies, and 4) future trends.