In the Caribbean, vast deposits of bauxite (processed to alumina by the Bayer process) are to be found in Jamaica, Guyana and Suriname. Consequently, the bauxite/alumina industry has, over many years, played a vital role in the economy of these countries. Further, dating back to as early as the 1970's joint venture consideration (mainly involving Trinidad & Tobago and Jamaica) was given to extending the industry to include regional production of aluminum. In view of the revival of the debate, prompted by Trinidad & Tobago stated intentions of building smelters in Trinidad, this project reviews the science and technology behind the production of alumina and aluminum and explores the scientific issues associated with environmental impact pertinent to the processes themselves and to waste disposal techniques/methods.