Objective: To remove or modify fluorotic enamel stains using a combined chemical micro-abrasion and bleaching technique. Design: An in-vivo study was carried out. A sample of 21 participants was randomly selected from patients presenting with brown staining due to fluorosis as the chief complaint. Eighty nine teeth were selected based on the Thylstrup-Fejerskov Index [TFI] with a score of 4 as the acceptable maximum. Only upper anterior teeth were included in the study. Setting: The study was undertaken at the University Of Nairobi Dental Hospital, Kenya. Subjects: Patients with an expressed need for treatment of their discoloured teeth who consented to a clearly demonstrated treatment procedure constituted the sample. Results: Enamel discolouration was removed or modified yielding a uniform colour and lustre depending on the initial depth of the stain. All patients appreciated the colour change. Conclusion: A combined chemical micro-abrasion and bleaching technique is a feasible treatment modality in selected cases of enamel fluorosis.