### 7.3.1 Problems with Conventional Alginate

Concerning, and as reported by Kaur *et al*., [5], conventional alginate's ability to reproduce fine detail was relatively limited compared with other impression materials such as elastomeric material. Their work supports other studies [19, 21] who noted that alginate is not highly accurate for use in fixed partial dentures. The above authors, however, acknowledged the suitability and accuracy of alginate for partial framework impressions. Moreover, literature [7, 22, 23] documents that conventional alginate has poor dimensional stability. For example, casts must be poured within 10–12 minutes of impression making or distortion becomes a major issue [5]. Furthermore, Craig and Robert [19] and McCabe and Walls [20] reported that the conventional alginate has a poor tear strength. While alginate impressions may capture subgingival contours and anatomy, McCabe and Walls [20] observed that the impression tears upon removal. In addition, Anusavice [24] noted that conventional alginate contains silica dust in the form of diatomaceous earth and other components such as cadmium and lead among its composition, which are considered toxic when inhaled.

### 7.3.2 Current Trends and Modification of Alginate

Despite the above-mentioned drawbacks, since its introduction, alginate has remained the commonest impression material used in restorative dentistry. This is mainly attributed to its ease of use and cost-effectiveness when compared against other impression materials [22]. Hence, it was highly sensible and critical to modify alginate in order to enhance its continuous suitability for clinical performance. For instance, Kaur *et al*., [5] revealed that various advancements in alginate modifications have been introduced in dentistry. Corroborating with them, Srivastava *et al*., [9] moot that the composition of alginate has been altered in recent years by modifying its composition with other materials. This was done in an attempt to improve its properties and clinical performance. Notably, there have been a variety of alginate impression materials in the market, with some varying in their properties, setting, and pouring time [22, 25]. As different brands of alginate are commercially available in the markets, it is essential to thoroughly research the properties of these products in order to establish their inherent properties. This section therefore examines the recent progress in alginate modification and applications in restorative dentistry.