Lead contamination and subsequent degradation of the affected soil is a global environmental issue. Besides the natural weathering processes, the chief ways in which lead contaminates the environment are anthropogenic. The plants which grow on such lead contaminated soils can uptake the heavy metal and translocate it to the various parts both in the intracellular and extracellular fashion. Lead toxicity can affect the overall plant health as it impacts basic physiological and metabolic processes such as germination, uptake of nutrients and minerals, photosynthesis, respiration, oxidative metabolism, mitosis etc. Plants in response to this toxicity can develop a certain degree of tolerance via passive and inducible mechanisms. These mechanisms have been exploited in the new era technology of phytoremediation which aims at a sustainable cleansing of lead contaminated soils by using plants. Aromatic plants because of their low risk of contamination in products consumption and a high demand over supply aspects are a suitable choice of plants that can be used for phytoremediation. This review addresses the aspects of lead contamination and its sources, the uptake of lead by plants, lead toxicity in plants, and the consequent tolerance developed as well as the potential and advantages of using aromatic plants for phytoremediation of soils which are contaminated with lead.