Deposit formation in utility boilers occurs via a number of consecutive steps; 1) release of critical elements like K, Na, Pb, Zn, S and Cl, 2) formation of gaseous species, fly ash and aerosols, 3) transport and adhesion of ash species, 4) deposit build-up and consolidation, and, finally, 5) shedding of deposits. Some of the steps may be repetitive, as the process is partly cyclic [Frandsen, 2011]. The inorganic fraction of solid fuels, may cause several problems during combustion, most importantly formation of particulate matter (aerosols and fly ashes). These may subsequently induce deposit formation (slagging and fouling) on superheater tubes, leading to a potential reduction in heat transfer efficiency to the water/steam cycle, or, to chemical attack (corrosion) or physical wear (erosion) of superheater tubes. These problems may give rise to irregular operation, or even costly shutdowns of combustion units. Through several years, high quality research has been conducted on characterization of fuels, ashes and deposit formation in utility boilers fired with coal, biomass and waste fractions. Huge amounts of experimental data have been reported, from such work, but the fact is that there are still in 2017, a number of big gaps in our current understanding of these phenomena, and that we need focus on these points, in order to be able to describe, understand, and, quantify the processes of ash and deposit formation completely [Frandsen, 2009]. This paper provide a brief outline of the current status on release of critical ash-forming elements, formation of aerosols respectively fly ash formation is systems fired with solid fuels. The paper is a significantly updated, but condensed version of a review-paper on the same subject, presented in Lapland, Northern Finland in 2010 [Frandsen et al., 2010].