Precipitation of solid salts due to high-pressure phase separation of seawater and brines

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When seawater is heated to high temperatures at high pressures, it passes into its supercritical domain, where the solubility of salt is reduced to near zero. This means that particles of solid salt precipitate *in-situ*, as first documented in the laboratory by Tester et al. (1993). This is now a well-known fact and is one of the main obstacles to effectively use 'supercritical water oxidation' (SCWO) as a 'green technology' for destroying toxic wastes. In natural environments, such as active hydrothermal systems during subduction and rifting, phase separation of seawater and other brines occurs wherever hot magma encounters brines under high-pressure conditions. But, in the early literature on high-pressure phase separation of seawater, there was doubt of *in-situ* precipitation of halite. The fact that salts reach saturation and precipitate under special geological conditions is now recognised as a fact. The consequences of salt precipitation have been investigated, and it has been concluded with high probability, that accumulation of huge amounts of halite and other salts is a result of prolonged hydrothermal activity over geological time. Details related to precipitation, re-dissolution, re-deposition, and behaviour of the different salts, in different tectonic settings, however, remain to be unravelled in more detail.