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Plasma facing surface composition during Li evaporation in NSTX and LTX[1] C.H. SKINNER, M. JAWORSKI, H.W. KUGEL, R. MAJESKI, R. KAITA, V. SURLA, P.P.P.L., R. SULLERBERGER, B. KOEL, Princeton University — Evaporated lithium coatings can react with water in the base vacuum to produce lithium hydroxide and hydrogen. Such coatings can significantly reduce the implantation length of incident deuterium. Since tokamaks typically do not have ultrahigh vacuum (UHV) conditions, surface reactions can occur in the time interval between lithium evaporation and the next discharge resulting in a PFC surface that should be considered as a mixed material rather than a pure "lithium coating." We present calculations of the flux of water from the residual vacuum to PFCs in NSTX and LTX. To avoid reactions with residual vacuum gases over a period of a few minutes UHV conditions are required and a new UHV surface science facility at PPPL is being commissioned. Investigations of the reactions of freshly evaporated lithium with controlled introduction of trace gases will be presented.

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