abstract We investigate the decoherence of histories of local densities for linear oscillators models. It is shown that histories of local number, momentum and energy density are approximately decoherent, when coarse-grained over sufficiently large volumes. Decoherence arises directly from the proximity of these variables to exactly conserved quantities (which are exactly decoherent), and not from environmentally-induced decoherence. We discuss the approach to local equilibrium and the subsequent emergence of hydrodynamic equations for the local densities.