Memory CD8 T cells can provide protection from re-infection by respiratory viruses such as influenza and SARS. However, the relative contribution of memory CD8 T cells in providing protection against respiratory syncytial virus (RSV) infection is currently unclear. To address this knowledge gap, we developed a prime-boost immunization approach to induce robust memory CD8 T cell responses in the absence of RSV-specific CD4 T cells and antibodies. Unexpectedly, RSV infection of mice with pre-existing CD8 T cell memory led to exacerbated weight loss, pulmonary disease, and lethal immunopathology. The exacerbated disease in immunized mice was not epitope-dependent and occurred despite a significant reduction in RSV viral titers. In addition, the lethal immunopathology was unique to the context of an RSV infection as mice were protected from a normally lethal challenge with a recombinant influenza virus expressing an RSV epitope. Memory CD8 T cells rapidly produced IFN-γ following RSV infection resulting in elevated protein levels in the lung and periphery. Neutralization of IFN-γ in the respiratory tract reduced morbidity and prevented mortality. These results demonstrate that in contrast to other respiratory viruses, RSV-specific memory CD8 T cells can induce lethal immunopathology despite mediating enhanced viral clearance.