Sponsored by the Chemical Security Analysis Center (CSAC) of the U.S. Department of Homeland Security, the Defense Threat Reduction Agency (DTRA) of the U.S. Department of Defense, and Transport Canada, the Jack Rabbit II tests were designed to release liquid chlorine at ambient temperature in quantities of 5 to 20 T for the purpose of quantifying the behavior and hazards of catastrophic chlorine releases at scales represented by rail and truck transport vessels. Phase 1 of the two-year testing campaign was conducted at Dugway Proving Ground, Utah, in August and September of 2015. Five successful field trials were conducted in which chlorine was released in quantities of 5 to 10 tons through a 6-inch circular breach in the tank and directed vertically downward at 1 m elevation over a concrete pad. Data from the test program is being made available. This paper summarizes an analysis of the available data from the concrete pad including analysis of the temperature measurements below and above grade in the concrete pad. Assessment of the chlorine rainout is estimated.