In the atmosphere, cycloaddition of ozone to the double bond of alkenes produces energized Criegee intermediates, which undergo subsequent decay processes to yield OH radicals. In this laboratory, a simple alkyl-substituted Criegee intermediate CH$_3$CHOO is produced by 248 nm photolysis of CH$_3$CHI$_2$ and subsequent reaction of CH$_3$CHI with O$_2$ in a quartz capillary tube reactor, following the same approach utilized for CH$_2$OO.$^a$ The CH$_3$CHOO intermediate (m/z=60) and other products are detected following supersonic expansion using 118 nm VUV ionization in a time-of-flight mass spectrometer. The OH radical products from decomposition of the CH$_3$CHOO intermediate are also directly detected at m/z=17 using a new UV+VUV ionization scheme, combining UV excitation on the OH A $^2\Sigma^+$-X $^2\Pi$ (1,0) transition with fixed-frequency VUV at 118 nm,$^b$ or alternatively by UV laser-induced fluorescence on the OH A-X transition; OH products are also observed from CH$_2$OO. The CH$_3$CHOO intermediate is characterized by a strong B $^1\Delta'$-X $^1\Sigma'$ electronic transition, in which UV excitation near the peak of a broad absorption profile centered at 320 nm results in significant depletion of the CH$_3$CHOO photoionization signal. The mechanism proposed for OH generation from energized CH$_3$CHOO and many larger Criegee intermediates is a 1,4 H-atom shift to form vinylhydroperoxide species that decay to produce OH. This reaction scheme provides a non-photolytic source of OH radicals in the atmosphere during night and winter times.