



## Effects of Sodium Chloride Solutions on Lab-Scale Flares



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### Abstract

During a well-completion, fluids returned to the surface are sent to separators and the gas is flared. Recent work at the Carleton Energy and Emissions Research lab investigates the potential effects on flares should any produced water carry through in the form of small aerosols. Detailed literature review shows that the composition of produced water during flowback tends to be high in salt content (sodium, chlorine, calcium, magnesium) and is similar in composition to that of naturally occurring formation water. Preliminary lab experiments with simple 5 and 15% NaCl solutions show that salt aerosols in the flare stream can affect complete combustion: carbon monoxide yields increase, particulate matter emissions increase, and the form of the particulate matter may be altered relative to that emitted by a standard flare. Further experiments are planned to bound the range of potential effects while considering a broader range of operating conditions.