

CO adsorption and oxidation using the Ambient Temperature Catalytic Oxidizer (ATCO) catalyst with LiOH

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We now present a new investigation into the removal of CO using an ambient temperature catalytic oxidizer (ATCO) catalyst which is comprised of 2% Pt on a charcoal support. This catalyst was also tested with a base material frequently used for CO₂ capture, lithium hydroxide (LiOH). The ATCO is operated in several enclosed habitat systems and is designed to catalytically remove CO from the habitat's air. The catalytic reaction is designed to produce carbon dioxide (CO₂) which is subsequently scrubbed via the LiOH canisters. The objective of this research is to operate with small quantities of LiOH (~25g) and ATCO catalyst (~25g) to check the ability of the ATCO catalyst to convert CO and to operate downstream of CO that being actively scrubbed by LiOH. In addition, this testing was performed to investigate the ability of the ATCO catalyst to resist poisoning from acid gases, chiefly HCl. The measurement of the poisoning rate of the ATCO catalyst (2% Pt/charcoal) was conducted in stainless steel reactors designed to test variables such as bed depth (2.25 to 4.5 cm), contamination concentration (30 and 100 ppm), humidity, and residence time (0.37 to 0.4s).