The Use of Activated Carbon as a Dessicant for Hopcalite type Carbon Monoxide Catalysts.

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Hopcalite type catalysts have been used for many years to protect against carbon monoxide, for instance in the Mines Self-rescuer. They are relatively robust and inexpensive but suffer from poor performance with humid air, especially when starting from ambient temperature. Activated carbon will adsorb water from air but is rarely used as a dessicant as the adsorbed water interferes with its primary function of removing organic vapours.

This work builds on an undergraduate project in which the air-drying properties of ASC carbon were studied in conjunction with carbon monoxide oxidation catalysts to see if this provided enough protection against moisture to allow a secondary layer of catalyst to be positioned at the rear of a standard canister. The aim was to provide more complete protection against fire atmospheres than is achieved by normal dessicant/Hopcalite systems which offer little or no protection against other toxic gases in the fire atmosphere.

Initial results suggest that a 2cm bed depth of ASC carbon may be sufficient to give enough protection to allow escape from a fire atmosphere in situation where escape is possible in a few minutes.