Na/Ca/K Pollution Scrub: A Domestic Approach to Chemical Carbon Capture

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PURPOSE: Daily activities like driving a car, charging a phone and many other routine activities leave a carbon footprint by releasing carbon dioxide into our air. Atmospheric levels of carbon dioxide have never been higher, and many methods and processes have been developed to capture carbon dioxide from the air. As an addition to current efforts, this study was undertaken to redesign those methods and processes in a manner that can be used in a domestic (home) setting. The goals of this study were to prove a chemical process could capture carbon dioxide and find the best concentration/chemical/material to be used as an absorbent in a prototype. PROCEDURE: A sealed environment was created to observe changes in carbon dioxide PPM using a meter. Numerous concentrations of two different chemicals and varying types of a potential absorbent material were tested. RESULTS: When it comes to carbon dioxide reduction, KOH and NaOH were each better within a specific range of concentrations. When maximum capacity was considered, it was concluded depending on the use, either may be effective. Carbonate was found in the resulting solutions and cheesecloth saturated with the alkaline bases proves an effective absorbent. CONCLUSIONS: Though initially there was minimal data to support this study, altering some variables revealed promising results. This study demonstrates carbon capture is possible at a domestic level. The next phase would be to find ways to obtain the captured carbon dioxide by separating it from the absorbent and develop a prototype for domestic use.

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