Ourself and Info:

Hello everyone. Welcome to our project. We are team Sootousters. Our team members are Shazed Muntashir Ovi, Sumaiya Parvez Pranti, Arpon Chowdhury, Kaneez Fatema, and Suvojit Das. Our challenge is categories on Space for Change. Let’s introduce our project. Our project name is recirculation fabric.

Introduction:

Earth, our home, is the third planet from the sun. It's the only planet known to have an atmosphere containing free oxygen, oceans of water on its surface, and of course life. But Air pollution has been recognized as the largest global environmental health risk, causing an estimated seven million deaths across the globe annually according to the World Health Organization. There are many gases like CO2, CO, NOx, CFC, etc., and dust which are the main reasons for air pollution. We want to mitigate the harmful gases and substances caused by air pollution as much as possible. Carbon dioxide is one such element.

Problem and remedy:

In past, the carbon cycle has changed on Earth in response to climate change. Ice ages developed when Northern Hemisphere summers cooled and ice built up on land, which in turn slowed the carbon cycle. Meanwhile, a number of factors including cooler temperatures and increased phytoplankton growth may have increased the amount of carbon the ocean took out of the atmosphere. Similarly, at the end of the last Ice Age, 10,000 years ago, carbon dioxide in the atmosphere rose dramatically as temperatures warmed Since the beginning of the Industrial Revolution when people first started burning fossil fuels, carbon dioxide concentrations in the atmosphere have risen from about 280 parts per million to 387 parts per million, a 39 percent increase. This means that for every million molecules in the atmosphere, 387 of them are now carbon dioxide--the highest concentration in two million years. The amount of solar energy received by the Earth has followed the Sun’s natural 11-year cycle of small ups and downs with no net increase since the 1950s. Over the same period, global temperature has risen markedly. It is therefore extremely unlikely that the Sun has caused the observed global temperature warming trend over the past half-century.The broad consensus among climate scientists is that increasing concentrations of carbon dioxide in the atmosphere are causing temperatures to warm, sea levels to rise, oceans to grow more acidic, and rainstorms, droughts, floods, and fires to become more severe. From the CDC report of Flavorings Related Lung Disease, National Institute for Occupational Safety and Health has a Recommended exposure limit for carbon dioxide not to exceed five thousand ppm over an 8-hour TWA and a 15-minute TWA STEL of thirty thousand ppm for carbon dioxide in the workplace air.

Our Idea and Solution:

Hence, Carbon Dioxide is harmful for our environment and body. For that concern we developed a carbon dioxide absorbent fiber. Their Cellulosic Fiber will be coated with amine radiation induced and chemically initiated graft polymerization with three amine-based monomers. Chemisorbing systems commonly use the reaction driven by primary or secondary amines to capture CO2. This mechanism exhibits an enthalpy of reaction of 80killo joule per mole at 40 °C and is therefore energetically favorable. The primary or secondary amine absorption reaction with CO2 follows two steps : CO2 binds to an amine to form a zwitterion, then another amine deprotonates the zwitterion. These sorbents capture CO2 through intermolecular dispersion interactions between the Cellulosic fibers and the CO2 molecules trapped in small pores. The captured CO2 may release in gas from. At temperature slightly high that obtaining ambient condition. The release CO2 can use be captured at closed vessel. If we can use it in the Carbon Emitting Factories, then it is possible to absorb about 18-44 grams of carbon dioxide per kg.

Future Plan:

In the future, we will try a more efficient way to capture carbon dioxide through our process. We also studied some other particles that cause our air pollution. We will also try to mitigate other polluting particles from the air through our idea. We will study on how we can use our polluting agent in the proper way for our future without the emission of CO2