



Portable Carbon Monoxide Source for Therapy and Organ Delivery

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The Wisconsin Alumni Research Foundation (WARF) is seeking commercial partners interested in developing a medical carbon monoxide generator that is safer and eliminates the need for pressurized gas bottles.

Overview

The inhalation of small amounts of carbon monoxide (CO) by a transplant organ recipient has been shown to significantly improve transplant outcomes. Currently, medical grade CO is only available in high-pressure gas cylinders. Besides being heavy and unwieldy, cylinders of compressed CO pose safety risks even beyond those generally associated with cylinders (e.g., explosive rupture, asphyxiation, tipping risk etc.).

At high concentrations, CO is both flammable and highly toxic. As such, an unintentional cylinder leak or breach could result in dangerously high levels of CO in the local environment. These safety concerns are particularly acute in situations requiring air transport, such as chronic palliative care and organ transport.

A safer, lighter and more compact CO delivery device would be of obvious benefit.

The Invention

UW–Madison researchers have developed a portable carbon monoxide generator for medical use that creates precise, therapeutically relevant, concentrations of medical grade CO out of the surrounding air in real time. The device is inherently safe, as it produces only the amount of CO needed for therapy. The device is incapable of producing enough CO to pose a safety hazard.

The heart of the generator is a reaction chamber holding a small cartridge of purified carbon. The CO is produced by heating the carbon in the presence of air that is fed continuously into the reaction chamber. The carbon can be heated by any controllable energy source, such as an electrical filament or laser.

The amount of CO in the output stream is monitored by a sensor. Using feedback on both the gas flow rate and the heat source, the amount of CO generated is controlled to match the prescribed, adjustable value.

Applications

- Producing and delivering medically pure carbon monoxide
- Organ transplant containers
- Laboratory delivery

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Key Benefits

- Eliminates pressurized bottles

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- Device is smaller, safer and more manageable.
- Enables precise and controlled delivery
- Convenient for air and emergency transport

Additional Information

Related Intellectual Property

- [View Divisional Patent in PDF format.](#)

Tech Fields

- [Medical Devices : Medical tools](#)
- [Therapeutics & Vaccines : Organ & tissue transplants](#)

For current licensing status, please contact Jeanine Burmania at jeanine@warf.org or 608-960-9846

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