

## Pulling Huge Benefits out of Thin Air



More than 90 percent of the inhalation anaesthetic used in hospital operating rooms is vented unabated into the atmosphere. This is not only wasteful but also environmentally harmful, producing greenhouse gas emissions up to 3,766 times more potent than carbon dioxide. Blue-Zone Technologies Ltd. captures, reclaims, distills and purifies these volatile anaesthetics, allowing them to be reused up to 20 times.



SUSTAINABLE DEVELOPMENT  
TECHNOLOGY CANADA™

Partnering for real results.

## Blue-Zone Technologies Ltd.


### A Homegrown Technology with International Applications

Based on technology licensed from another Canadian company, Praxair, Blue-Zone's multistage solution uses thermal and cryogenic processes to extract anaesthetic molecules from the vented gases trapped in its Deltasorb® canisters. This is done at a central facility. After purification, the resulting anaesthetic is ready for sale and distribution. No other technology of this kind yet exists on the world market.



### A Canadian Leader in a Global Market

The global inhalation anaesthetic market—currently estimated at \$1.1 billion a year—is increasing by 15 percent annually, with the fastest growth in nations such as India, China, Brazil and South Africa. Traditionally, entry into these markets has been barred by the high cost of anaesthetics. Blue-Zone's Deltasorb® process could open the door by offering generic alternatives. As there are no competitors able to capture, purify and redistribute such gases, Blue-Zone is uniquely able to extend these critically needed anaesthetics into new global markets.



*“Increased efficiency has both environmental and economic benefits. By capturing and purifying inhalation anaesthetics currently lost to the atmosphere, our technology strengthens Canada as a world leader in healthcare services and environmental due diligence.”*

**Dusanka Filipovic**  
President and Vice Chair

## Cutting Costs with Cleaner Air

**More than a billion dollars is spent on inhalation anaesthetics every year around the world—\$20 million by Ontario hospitals alone. Yet a huge percentage of these valuable chemicals are vented unabated into the atmosphere, wasting the financial resources of a healthcare system already under strain and emitting toxic and aggressive greenhouse gases (GHGs) into the atmosphere.**

**Blue-Zone Technologies’ proprietary solution captures valuable inhalation anaesthetics in a device called a Deltasorb® canister, which attaches to existing operating room air scavenging systems. The captured anaesthetics are transported to a central processing hub, purified, to medical standards. This process allows improved efficiency of the use of expensive medical chemicals by 10 to 20 times, slashing costs for hospitals, university medical centres and municipalities.**

### Greening Anaesthesia

Because anaesthetics are such potent GHGs, even a slight reduction in emissions can have a significant impact. And in the case of Blue-Zone, the reduction is anything but slight: virtually all emissions are captured. Blue-Zone anticipates each operating room equipped with its Deltasorb® solution will cut GHG emissions by 15 tonnes of CO<sub>2</sub>e annually—adding up to a reduction of 24.2 kt CO<sub>2</sub>e per year across Canada by 2020. Through its deployment, Blue-Zone’s technology also has the potential to stimulate an industry standard for the reclamation, purification and reuse of vented anaesthetic gases—an important step toward ensuring the environmental and economic sustainability of the healthcare sector.

### Market-Ready Results

In December 2009, Blue-Zone completed a four-and-a-half-year demonstration project in which Deltasorb® canisters were used successfully in 143 operating rooms, capturing and reclaiming 600 kg of anaesthetic gases. The demonstration’s net GHG emission reductions totalled 489 tonnes of CO<sub>2</sub>e.

Blue-Zone’s purification facility in Concord, Ontario has received the Site Establishment License – site approval from both Health Canada and the Food and Drug Administration to produce medical-grade anaesthetic from reclaimed chemicals. With Deltasorb® canisters already in 200 Ontario operating rooms and an additional facility under construction, Blue-Zone is well on its way to becoming a commercial success story.

### Supporting the Healthcare Sector—and the Economy

By extending the useful life of these expensive anaesthetics, Blue-Zone’s technology will help hospitals deliver medical services at a lower cost, without affecting quality or availability of care. The company plans to establish a Canadian base throughout the country’s 4,400 operating rooms before expanding to the United States and the lucrative global market. As its technology is adopted, Blue-Zone expects Canadian facilities will be called on to process an increasing quantity of anaesthetics—creating jobs and economic value in this country.

While all major anaesthetic agents are free from U.S. patent protection, the global pharmaceutical market is highly regulated and dominated by a small number of suppliers. Blue-Zone plans to form a strategic alliance with one or more of these corporations, either selling the captured anaesthetics to the partner in bulk or packaging the gases under a generic brand.



## Creating Canada's Green Infrastructure

Sustainable Development Technology Canada finances and supports the development and demonstration of clean technologies—solutions that address issues of climate change and air, soil and water quality to deliver economic, environmental and health benefits to Canadians.

An arm's-length, not-for-profit corporation created and funded by the Government of Canada, SDTC bridges a critical gap in the innovation chain, helping entrepreneurs move their products and solutions out of the laboratory and into the marketplace.

SDTC funds innovative new technologies, and fast-tracks their development by helping cleantech entrepreneurs connect with partners and customers, formalize business plans and qualify for private sector financing.

Find out more by visiting us at [www.sdtc.ca](http://www.sdtc.ca)

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