



MEDIA BACKGROUNDER

February 2010

THE COMPANY

Ostara Nutrient Recovery Technologies Inc. is a Vancouver-based company developing and marketing proprietary technologies that recover nutrients from liquid wastewater and recycle them into an environmentally-friendly slow release fertilizer, called Crystal Green®.

Ostara's water technology, named PEARL™ Nutrient Recycling Process, reduces the amount of pollutants released into the environment, helps wastewater treatment plants reduce operating costs and meet environmental regulations, and provides municipal and industrial customers with revenue from the sale of the fertilizer.

Ostara's core technology was developed at the University of British Columbia (UBC) over a period of five years. Phillip Abrary, President and CEO, founded the Company and licensed the Ostara technology from UBC in 2005. Shareholders include UBC, VantagePoint Venture Partners, a leading international cleantech investor based in Silicon Valley, California, and Frog Capital, a London-based venture investor that focuses on environmental and clean technology. Environmental advocate and lawyer (and partner in VantagePoint Venture Partners) Robert F. Kennedy Jr. joined Ostara's Board of Directors in February 2009. In September 2009, Ostara was named one of the Top 100 Global CleanTech Companies by The Guardian, a London-based media group.

COMMERCIALIZATION

The Company estimates that approximately 200 plants in North America and several hundred plants in Europe and the rest of the world are candidates for the Ostara technology.

The City of Edmonton was the first customer for Ostara's technology. Ostara operated a successful pilot plant in 2006 and commissioned a full-scale demonstration reactor at the Gold Bar wastewater plant in 2007.

Ostara's first commercial nutrient recycling facility began operating in Portland (USA) at the Clean Water Services' Durham Advanced Wastewater Treatment Plant in June 2009. The Durham facility is the first in the world to implement a full-scale commercial operation, where 100 per cent of the wastewater stream is being treated with Ostara's nutrient recycling technology. Ostara's PEARL™ nutrient recycling process is removing more than 90 per cent of the phosphorus from the treatment plant's sludge dewatering liquid stream, and producing approximately 500 tons of Crystal Green® fertilizer annually.

Commercial scale nutrient recovery facilities will begin operation in 2010 at Hampton Road Sanitation District's Nansemond Wastewater Treatment Plant in Suffolk, Virginia and the City of York's Wastewater Treatment Plant in Pennsylvania.

BUSINESS MODEL

Ostara offers municipalities two business models to incorporate Ostara technology into their wastewater treatment plant.

- In the capital-based model, the municipality pays Ostara to construct the nutrient recycling facility and owns and operates the completed facility. The municipality's investment is paid back over approximately five years from a combination of revenue from the sale of the fertilizer by-product, increased plant capacity and reduced operating and maintenance costs.
- In the fee-based model, the municipality does not pay the construction or capital costs of the Ostara nutrient recycling facility, or the ongoing operating costs. Ostara is reimbursed for all construction and capital costs, plus the Company's profit margin, from a negotiated fee paid by the municipality over 10-15 years. This fee is calculated from a share of the wastewater plant's operating and maintenance cost savings attributed to the Ostara nutrient recycling facility. In addition, all operating costs for the Ostara nutrient recycling facility are covered by the municipality's share of the revenue of the by-product fertilizer.

For a typical wastewater treatment plant serving one million people, net cost savings of incorporating the Ostara process can exceed \$1 million per year. These savings are achieved by:

- Preventing plant downtime and saving maintenance costs of cleaning clogged pipes, pumps, and other equipment throughout the wastewater plant;
- Reduced sludge volumes and reduced disposal costs;
- Improved overall system reliability through reduced nutrient loadings and discharge; and,
- Revenues from Crystal Green® fertilizer produced by the Ostara process.

THE TECHNOLOGY

Ostara's core technology, PEARL™, was developed at UBC's Civil Engineering Department by the Pollution Control and Waste Management group. The research team arrived at a proprietary fluidized bed reactor design which not only removed in excess of 85 per cent of the influent phosphorus, but also resulted in the formation of a highly pure, slow release fertilizer in granular form consistent with that used in the fertilizer industry.

Ostara has operated pilot-scale reactors at more than a dozen municipalities across North America, and in Europe, Asia and the Middle East. The technology has also passed performance tests at a number of industrial wastewater treatment sites including corn ethanol production plants. The technology development was also supported by BC Hydro, Stantec Inc., the Natural Sciences and Engineering Research Council (NSERC), the National Research Council (NRC) and Sustainable Development Technology Canada (SDTC).

THE ENVIRONMENTAL IMPACT

Wastewater treatment plants, particularly plants that practice biological nutrient removal, concentrate large quantities of nitrogen and phosphorus in their sludge handling streams. These dissolved nutrients combine with magnesium to form struvite scale in piping, pumps and valves. This scale has an appearance and strength similar to concrete and must be removed either mechanically (using chisels or jackhammers) or through flushing of the affected pipelines with strong acids. Plugging of the piping systems leads to pumping inefficiencies, reduced system capacity, high operating costs, maintenance shutdowns and pipeline failures.

The size of the problem varies from one wastewater treatment plant to another. For a typical wastewater treatment plant serving one million people, the annual cost of dealing with the problems caused by concentrated dissolved nutrients can easily exceed \$1 million per year. Plants where biological phosphorus (Bio P) removal is practiced tend to experience even higher costs.

In addition to solving costly struvite scaling problems at the wastewater treatment plant, Ostara's technology reduces the amount of nutrients (ammonia and phosphate) in the sewage sludge liquids (that have to be treated) thereby resulting in 20 per cent to 50 per cent reduction in the total nutrient loading on the plant. This additional capacity enables the treatment plant to better meet its nutrient discharge limits.

The increasing accumulation of nutrients, such as phosphorus and nitrogen, discharged into the environment is one of the most significant environmental challenges facing the planet, according to the 2005 United Nations Millennium Ecosystem Assessment. Ostara's proprietary solution to this environmental challenge offers the Company access to a multi-billion dollar global market.

Each year more than 100 million tons of phosphate rock are mined and processed into fertilizer. Over time, a significant amount of this fertilizer enters the ecosystem as waste and agricultural runoff, leading to excessive nutrient levels, or a condition known as eutrophication. Eutrophication causes excessive algae growth in lakes, streams and oceans which depletes the oxygen supply in the water that is necessary to support aquatic life. Ostara's fertilizer - Crystal Green® - is in slow release form, which virtually eliminates run-off and ensures that all nutrients remain in the soil where they are applied, and do not end up in adjacent waterways, polluting the environment.

However, despite it being harmful to waterways, phosphorus is also an essential ingredient in fertilizer and, therefore, critical to the world's food supply. The conventional phosphorus fertilizer production cycle is an energy-intensive process that releases greenhouse gases into the environment at every stage: 1) mining of phosphorus ore, 2) concentration into phosphate rock, 3) transportation from mine sites around the world, 4) centralized manufacture into fertilizer, and 5) transportation to customers.

So not only does Ostara's technology reduce phosphorus runoff into the environment, Ostara's wastewater plant customers and Crystal Green® customers also contribute to environmentally sustainable development and to the reduction of greenhouse gases. Ostara recovers phosphorus from sewage sludge that would otherwise be wasted — either incinerated or dumped on landfills, both with negative environmental consequences. Heat needed to dry the Crystal Green® fertilizer pellets is recovered from the host wastewater treatment plant.

PRODUCTS

Ostara has developed two core products: PEARL™ and Crystal Green®.

PEARL™ is a nutrient recycling process with the following key benefits:

- Reduces and eliminates operating costs associated with the maintenance of clogged pipes, pumps, and other equipment;
- Reduces sludge volumes and the associated disposal costs;
- Improves process reliability through reduced nutrient loadings and discharge; and,
- Allows wastewater treatment plants to generate revenue from an environmental solution.

Crystal Green® is a slow release fertilizer with a high nutrient payload. Because 84 per cent of the product's raw materials are derived from waste recovered in PEARL™ systems, Crystal Green® has low production costs compared with fertilizers produced from mined phosphorus. Crystal Green® also has significantly lower contaminant levels than other commercial fertilizers, requires minimal processing after recovery from PEARL™ systems and is easy to store. It is being marketed throughout North America and Europe as a high-value (slow release), sustainable and environmentally-friendly product.

Crystal Green® fertilizer's combination of nitrogen, phosphorus and magnesium is unique to the fertilizer market, making it the perfect addition to existing blends. It is particularly valuable in conditions where phosphorus and magnesium-deficient growing media or soils are used and where slow release properties are valued.

Performance growing trials by university crop scientists and commercial fertilizer distributors have identified several uses for Crystal Green® including: turf grass, golf courses, high value food crops (such as berries and tree fruits), salmon habitat enhancement, forestry silviculture, horticulture, and container nurseries. Crystal Green® will be marketed through national and regional commercial fertilizer distributors and retail outlets.

Tests carried out by the British Columbia Ministry of Water, Land and Air Protection and by Ostara show that Crystal Green® contains negligible levels of heavy metals which are significantly lower than that found in competing commercial fertilizers. These tests also confirmed that no organic contaminants were found in the Crystal Green® samples. Crystal Green® is composed of more than 99 per cent pure struvite, with traces of calcium, iron and other micronutrients.

Although other phosphate recovery technologies are being developed around the world, Ostara's PEARL™ technology has a significant competitive advantage because it produces significantly larger and purer struvite granules.

MANAGEMENT

F. Phillip Abrary (BSc, CA), President, Chief Executive Officer and Director

Mr. Abrary is a founder of Ostara with more than 20 years of financial management and executive experience. His experience includes acting President and founder of RTM Norden Inc., an international business and technology consulting firm working with the manufacturing sector throughout North America and Europe, and manager of audit practice at PricewaterhouseCoopers working with private, public and multinational corporations.

Len Zapalowski (BSc, M.Sc), Senior Vice President

Mr. Zapalowski has more than 20 years of senior management experience with some of Vancouver's most successful companies including Nexus Engineering, Creo Products, and Pivotal Software. His broad global business experience includes sales, marketing and business development in North America, Asia and Europe.

Ahren T. Britton (MSc, P.Eng), Chief Technology Officer

Mr. Britton has more than 10 years experience in environmental engineering, specifically focused on the wastewater treatment industry. He is a co-inventor of Ostara's technology and developed the first prototype of Ostara's technology during his research at the University of British Columbia. His professional experience includes roles in engineering consulting, municipal utilities and heavy industry both in North America and in Australasia.

Jim Zablocki (MSc), Vice President Nutrient Operations

Mr. Zablocki has worked in the fertilizer industry for more than 30 years, specializing in slow release fertilizers. He has written a number of scientific papers and has been a consultant for government agencies regarding nutrient management programs. He has served in management positions with W. R. Grace & Co., the global specialty chemicals and materials company, and with the Scotts Company, the leading supplier of lawn care and garden care products in North America and Europe. His work with these companies included developing formulations and blends, as well as evaluating new technologies, coatings, substrates, and release profiles.

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