

VITRACYCLE: A CASE ANALYSIS

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INTRODUCTION

Each semester, the graduating MBA students, as a part of their program at San Diego State University must complete a “real life” consulting project, in which at least two faculty members participate and provide guidance. During spring 2005, a high technology San Diego company, which we will call DF, contacted our college for assistance in determining and evaluating various strategies for a new technology that they had developed to bring to market. This paper discusses the salient facts of one the interesting projects undertaken by the authors.

Company History

DF was founded in 1955 in San Diego, California, as a division of a large defense company, in order to harness the power of various nuclear technologies. The company is currently privately held and employs approximately 1900 people and has facilities not only in various cities in the United States, but also across the world. A new technology developed by DF is Vitracyle, a method to obliterate waste in an environmentally friendly fashion. Each day, hospitals across the United States produce approximately 6,600 tons of medical waste. One popular method to dispose of medical waste is incineration. Incinerators not only require energy to burn waste, they do not allow for the recovery of recyclables and potential energy.

Key Issues

Assessing the market for DF’s Vitracycle system required understanding the government regulations and political environment in each state. The political climate varies with regards to medical waste and waste product disposal systems, which are regulated at the state level. As an example, Illinois is considering making the use of incineration for waste disposal illegal. Such changes will certainly have a major impact on the potential interest in Vitracycle, as producers of medical waste would consequently need an alternate method of disposal.

Medical Waste Market

The Environmental Protection Agency (EPA) defines medical waste as “any solid waste that is generated in the diagnosis, treatment, or immunization of human beings or animals, in research pertaining thereto, or in the production or testing of biologicals, including but not limited to:

- Soiled or blood-soaked bandages
- Culture dishes and other glassware blood
- Cultures, stocks, swabs used to inoculate
- Needles -used to give shots or draw
- Discarded surgical gloves -after surgery
- Discarded surgical instruments -scalpels cultures

- Removed body organs -tonsils, appendices, limbs, etc.
- Lancets – the little blades the doctor pricks your finger with to get a drop of blood

The 4,895 hospitals within the U.S. are the largest generators of medical waste, producing 6,600 tons of waste each day. Approximately 15% of the waste generated by these facilities is considered regulated medical waste, while the remaining amount is considered general waste that does not require treatment. Facilities that produce medical waste may employ on-site incinerators. However, many have been closed because new regulations required changes and alterations that were financially prohibitive for many facilities to implement. The U.S. medical waste management and disposal market is continuing to grow each year. Business Communications Company Inc. (BCC), a market research agency, reported the medical waste market at nearly \$1.8 billion in 2003, with an expected annual growth rate of 5.7%, and projections estimating that the market will reach \$2.36 billion by 2008.

Problems with Disposal Processes

There are a variety of ways of which medical waste can be properly disposed, e.g., incineration, steam sterilization, etc. Each of these methods has inherent concerns and problems. For example, incineration releases toxins into the air, and reuse of sewer water has been deemed questionable. However, new alternative means of disposing of medical waste are being introduced. The opposition to the incineration of medical waste developed when federal agencies reported that many harmful agents were produced and released in the process of destroying the materials. Hospital waste contains a large amount of polyvinyl chloride (PVC) plastic, and when incinerated, dioxin, a toxic carcinogen, is produced. The EPA identifies medical waste incineration as the third largest source of dioxin production. Therefore, because over 90% of potentially infectious medical waste is incinerated, a safer more effective means of destroying medical waste seems necessary.

PROJECT METHODOLOGY

Analysis of the Political Environment

There is a national trend towards ending incineration as a means to dispose of the waste. This is evidenced from the declining numbers of incinerators that each state uses and the rising interests in alternative disposal technologies (given the funds to utilize these technologies of course). Overall, the number of incinerators has decreased from 5,000 in 1994 to less than 100 today. It is likely that the trend to reduce both the number of incinerators and the amount of waste disposed using incinerators will decrease over the next decade. Another identified trend involves shipping medical waste to neighboring states instead of disposing of the waste within the state jurisdiction. Overall, the political environment seems to harbor new technologies and products like DF's Vitracycle. However, many environmentally-related agencies are skeptical about new technologies that they sometimes refer to as "incinerators in disguise."

Analysis of Medical Waste Producers

Current trends reveal an increase in the overall quantity of medical waste produced, and a dramatic reduction in on-site facilities, specifically on-site incinerators. The biggest fear that hospitals have with managing their own medical waste treatment program is that they can be shut down entirely for violating EPA or other regulatory rules. During the past few years, hospitals have shown attempts at reducing the

amount of medical waste produced, exemplified by implementing plans such as the 3 R's program (Reduce, Reuse, Recycle) during the mid-1990's. However, the medical waste and disposal market continues to grow at a 5.7% annual rate.

Competitive Processes Analysis

Currently, Stericycle Incorporated is the owner of the largest market share in the medical waste disposal industry. Since 1993, Stericycle has acquired, through merger or acquisition, 59 separate companies, spurring corporate growth and a significant increase in market capitalization. As of today, Stericycle operates 42 treatment locations nationwide, offering services to all fifty states. There are numerous other competitors in the market. These competitors range from the individual hospital itself, where some still operate small-scale incinerators on site in order to dispose of waste, to medical waste treatment companies such as San-I-Pak Corporation and Medico Environmental Services, Incorporated.

Current barriers to entry into the medical waste disposal marketplace vary greatly from state to state. Each individual state sets different regulatory guidelines regarding waste disposal. Certain states, such as Rhode Island have set statutes dictating what can and cannot be done in the disposal of medical waste. Other states, such as Delaware are less stringent in terms of regulatory precedent and oversight. Another barrier to entry is the high capital costs for design, land acquisition, production, and regulatory clearance (if any).

Cost-benefit Analysis of Technology

Vitracycle has shown to be financially viable. It should be noted that the estimated initial costs of manufacturing for Vitracycle (\$3,700,000) was supplied for this analysis from DF. This cost is designated for the 10 Ton per Day capacity units. The estimated selling price per unit of \$1,200,000 was also supplied. Using an industry acceptable estimated Cost of Goods Sold of 76%, a series of Pro-Forma Income statements forecasting the expected returns for the next ten years were created. Based on the supplied data, and estimating that Vitracycle will be manufactured for 10 continuous years, at three units per year, each with an estimated lifespan of 20 years, we determined that Vitracycle as a whole shows a positive Net Present Value for DF.

RECOMMENDATIONS

Considering the large number of medical waste disposal companies operating in the United States, and the overwhelming presence of Stericycle, we did not recommend that DF attempt to launch the Vitracycle independently. Marketing and publicizing to states and hospitals would require a great deal of time and money in an environment where reputation is a critical factor. While DF certainly has a product that may receive the desired attention in the market place, DF needs to have a better and more in-depth relationship with hospitals and insiders in the industry. For example, in DF's case, the company would need to meet with state regulatory agencies first to pitch Vitracycle and obtain proper permits (a procedure that varies from state to state).

References: Available upon request