

SECTION ONE

Introduction

1.1 Waste as a Measure of Business Efficiency

Michael Porter and Claas van der Linde wrote in the September-October 1995 issue of *The Harvard Business Review*, that “pollution equals inefficiency”. This simple statement makes intuitive sense to business, but is it understood well enough to cause most businesses to evaluate their processes and change how they do business? Probably not without some help.

It has often been said that we are a throw-away society. While not an exclusively American trait, perhaps we excel at it more than most countries. This is an important and revealing fact about the cultures of American consumerism and American business. The United States has been able to obtain material resources relatively cheaply. In turn, this has fueled a strong economy and perpetuated some fundamentally flawed assumptions about business costs.

In the past, both manufacturing and non-manufacturing businesses often viewed waste as a cost of doing business. Efforts were made to be efficient, but there was little incentive for businesses to eliminate all forms of waste. Many processes produced an inevitable waste stream which was folded into overhead operating costs.

Pollution Control

The public began objecting to environmental pollution in the 1960s and 1970s. During this time, federal legislation began to require pollution control. In addition, companies saw a dimension of costs related to waste that included some incentives not to pollute. However, the incentives did not always prevent wasteful pollution generating practices. Instead, increasingly complex regulations were implemented by all levels of government. Thus began a new era of adversarial relations between government and business.

Pollution control measures had a positive environmental impact, but did not boost the bottom line of businesses and manufacturers. Industry argued that competitive pricing in a free enterprise system forced companies to produce goods, services, and maintain profits. Companies had to meet consumer demands while accessing a limited supply of commodities and minimizing waste. Pollution controls did not add value to those products and services. They were seen as a threat to profits. Increased costs for pollution control meant higher consumer prices.

However, in the 1970s environmental interests, with support from some economists, argued that it made economic sense to pay the higher prices resulting from pollution controls. Environmental economists argued that economic activities had impacts outside the realm of producers and consumers. They viewed these impacts as “externalities”. These included the impacts on clean air or clean water which could negatively affect people not involved in the business transaction. It was argued that higher prices could be justified if a more global view of economic activity were considered. For example, increased health costs from polluted air or water could have significant societal costs because an industry released air emissions or discharged pollutants into a river.

Waste Prevention

Pollution control was a core of the 1970s arguments and remains a significant part of waste management systems. Some companies even chose a more sensible approach that addressed both environmental and industrial concerns. In 1975, 3M Company began “Pollution Prevention Pays”, the “3P” program. The company saw it did not make "sense" or "cents" to create a waste which represented a loss of resources, and then pay again to control the polluted wastes.

3M realized that if they could change their processes or materials to reduce or eliminate the waste stream causing the pollution, they saved both money and resources. They realized additional savings by reducing or eliminating pollution control costs. It was a front-end solution called source reduction. For 3M, it meant more than \$500 million in savings over 20 years, based on the reduced costs from the first full year of each pollution prevention project.

Corporate Culture Change

A fundamental change in business acumen is needed for a company to shift from pollution control to pollution prevention. Management must see the bottom line value of investing in pollution prevention. Effective waste prevention strategies require that the entire organization understand its importance, and be supported in efforts to identify pollution prevention opportunities. It parallels the Total Quality Management (TQM) principles fostered by Demming in Japan and more recently in the United States.

Demming did not set out to prevent pollution, but rather to develop an organizational culture inherently efficient in delivering quality goods and services. He promoted a work environment that encouraged individual achievement through teams or groups, enabling or encouraging people to excel according to their strengths. Instead of the traditional top-down management favoring individual performance standards backed by individual incentives and penalties, Demming focused on achieving quality and efficiency by giving employees more responsibility in a group setting to identify and implement quality improvement strategies.

Competitive Markets

While the 3M model was available, it was not widely known or adopted by United States companies for over 10 years. The Demming revolution in Japan impacted the United States economy in a many areas, from cameras to electronics to automobiles. The most significant impact came from quality automobiles sold at a competitive price. Japan made a serious entry into the United States auto market in the 1970s, but many of those first vehicles had quality problems. The United States auto producers did not worry about Japanese competition. During the 1980s, however, quality became synonymous with Japanese autos. By 1990, *The Wall Street Journal* reported that Japanese auto makers produced cars with half the energy and half the waste than did United States automakers.

While the sudden shift in auto industry dominance was the result of many reasons, the Japanese used the Demming model and quickly improved quality. Raw materials were expensive for Japan to import, thus Japan had a strong incentive to generate little waste. This reveals how easily Japan achieved quality and low production costs. The same management system that allowed companies to produce fast quality improvements had also **reduced waste and prevented pollution.**

Competitive Business Today and in the Future

As Japan clearly demonstrated, **reducing waste also reduced costs**, leading directly to global competitiveness. That returns us to Porter and van der Linde equating pollution or waste with a measure of efficiency. They have argued that some regulation is essential to force companies to find innovative ways to reduce or eliminate waste. Rather than eliminating regulations, they argue for eliminating regulatory barriers to innovations that will lead to eliminating waste.

For United States companies, whether they have adopted “TQM” strategy or another quality management system, regulations and global competition will force changes. Successful companies will find innovation is the key to maintaining a competitive edge. This manual gives small business counselors basic tools to help companies identify basic waste reduction strategies, and to find the help these companies need to be competitive.

The next few sections introduce terms, concepts, and strategies that can be easily delivered by economic development counselors such as Small Business Development Center counselors, or their counterparts in the public and private sectors.

This introduction has attempted to equate pollution prevention with waste reduction or elimination, which in turn means cost reduction. The theme emphasized in this manual is **waste reduction leads to cost reduction.**

1.2 How to Use This Guidebook

This manual is a resource for small business counselors, extension agents, and others who have the opportunity to help small businesses understand the potential impacts of waste on the bottom line. There is something for every business in this guidebook. All businesses, whether manufacturers, private (and public) institutions such as medical and educational facilities, or retail and service businesses, will find useful information in this guidebook.

This book contains a number of sections of reproducible materials: brief tip sheets, case studies, check lists, and other information sources that can help businesses begin to understand opportunity related to waste reduction or elimination. In addition, the guidebook also contains reference information about public and private sector sources that the counselor or agent can use to direct their client for further assistance.

Section 2.0 Overview of Waste Reduction Concepts and Opportunities

This section is intended primarily for the counselor or agent who may not be familiar with the concepts promoted in the guidebook. The intent is to provide adequate background so the counselor understands key concepts, strategies, and tools used by waste reduction and pollution prevention professionals. It is not expected that the counselor will become an independent expert on waste reduction, but rather an informed partner with waste reduction professionals. An important feature of this section is the use of numerous **brief examples** to illustrate concepts or applications.

Concepts emphasized include effective communication about waste as an economic issue, understanding the advantages and some of the barriers to waste reduction, and understanding the many dimensions of wastes and associated costs. A fundamental tool is the use of cost accounting concepts that include the environmental or waste-related costs that are real and often overlooked by businesses.

General principles of waste reduction are discussed along with an overview of environmental management systems that are increasingly important for manufacturers. This section also offers a perspective about the diversity of environmental regulations and how they can impact a client (Section 5.0 provides a more detailed regulations primer).

Section 3.0 Small Business Waste Reduction Tip Sheets

Tip sheets form one of the **core resources** of the guidebook and were written to be short, easily read ideas for any client. The sheets can be reproduced and included with other handouts or materials that a counselor uses in an information packet. The tip sheet can also be used by the counselor as discussion points with a client.

Some tip sheets are generic, while others are very specific. For example, if the counselor is working with someone who is starting their own insurance office or law practice, the “Common Operations: General Offices” and “Common Operations: Groundskeeping/Landscaping” sheets are appropriate. The new owner of a hardware store could use the “Retail: General Merchandise Stores” and “Paint Retailers” sheets in addition to the common operations sheets that apply to office and landscape management. A small machine shop owner could benefit from the common operations sheets and the “Manufacturing Common Operations: Metal Parts Cleaning” tip sheet.

For most businesses, the counselor will find two or more tip sheets that will be suitable to include in an information packet for each client.

Section 4.0 Small Business Waste Reduction Case Studies

This section is another of the core resources of the guidebook and follows a similar format to the tip sheets of Section 3.0. While there are fewer case studies than tip sheets, the counselor will find examples that most clients will be able to relate to or appreciate in terms of the potential benefits of waste reduction. These sheets are to be used as supplements to the tip sheets, and can be included in the client information packet or as a for discussion in a counseling environment.

Section 5.0 Environmental Regulations: A Small Business Primer

Environmental regulations can be a substantial information burden for many small businesses. They need to know what regulations apply to them, but often don’t know or understand all of the applicable regulations. This section presents an overview of the major areas of Wisconsin environmental regulation, with the intent of providing the counselor and the client with a better understanding of the potential application of some regulations.

This section does not identify all specific environmental regulations that apply to businesses. Specific questions about regulations must be referred to the appropriate regulatory agency. This guidebook is intended to help counselors and their clients identify appropriate contacts to obtain that information. The appendices include information about where to find additional information or help from public and private sectors.

Materials in this section may be used as handouts for clients where a specific interest has been identified. For example, a small printing company or machine shop might find Section 5.3 “Determining Your Generator Status” helpful in assessing their hazardous waste status.

Section 6.0 Waste Reduction Checklists

Six short checklists provide the counselor or the client an opportunity to review background environmental information about the business. The lists will help determine if there may be a need for additional information or referral. Each checklist is based on a specific area of environmental regulation such as land use, waste type, or worker safety issues.

The checklists are intended to be short assessments that can be conducted between the counselor and the business, or can be done by the business independently. Lack of time or client reluctance to sit through these questions with the counselor may be addressed by giving one or more of the checklists to the client to do on their own time. Follow up can then be provided to help the client find the information resources they need.

Appendices

Appended materials consist largely of directory information, but also include fact sheets that could be provided to clients. The information in the appendices is intended to provide the counselor with appropriate contacts for referrals or sources of supplemental information that is needed by the clients.

Appendix A: promotional sheets to catch client interest in waste reduction through counseling contacts in marketing and/or program opportunities.

Appendix B: environmental regulation hotlines, fact sheets, and contact lists for consultants, environmental labs, environmental assessments, hazardous waste disposal, and materials exchanges.

Appendix C: background information on state and private sector programs and partnerships that were created to provide technical, educational, or other assistance to small businesses regarding environmental regulation.

Appendix D: reference list of information sources used to prepare this publication. Other sources of information are also listed.

Supplemental Information

This section is composed of national lists of hotlines, labs, directories, agencies, trade associations, partnerships, and other potential sources of information for clients.

Companion Videotapes

Two videotapes provide supporting information. The first video, "Cost Reduction through Waste Reduction: A Key to Competitive Success" provides an introduction to waste reduction opportunities and benefits through a series of case studies. The tape depicts both manufacturing and non-manufacturing sectors, with national examples. This tape is intended for small business clients or audiences, and can be used in whole or in part, depending on client needs.

The second video, "Expanding Partnerships: A Comprehensive Approach to Small Business" provides the same core of case studies, but has an introduction and closing intended for the benefit of small business counselors.