



EMA MAKES \$ENSE !!!
CLEAN AND COMPETITIVE:
ENVIRONMENTAL MANAGEMENT
ACCOUNTING FOR BUSINESS

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United Nations Division for Sustainable Development
Department of Economic and Social Affairs

New York
March 2003

Did You Know That...

Many businesses, even large and well-managed ones, *significantly underestimate:*

- The amount and value of raw materials they lose in the form of waste? (e.g., in wastewater, solid waste, air emissions);
- The true costs of waste management? (e.g., costs of waste handling, recycling, disposal, and treatment); and
- Related items such as insurance costs, potential environmental liability, and the likely costs of future regulation



If a company underestimates these costs, *it cannot manage and reduce these costs!*
How good a job does your company do?

The "Cost of Waste"

Reducing the Cost of Waste at Murauer Bier

A brewery in Austria, Murauer Bier, uses materials accounting and cost accounting data to calculate the cost of waste generation at the facility, including the purchase value of raw materials lost in the form of waste and the cost of waste disposal. Based on the data collected, Murauer has implemented waste minimization efforts with the following results from 1995-2000:

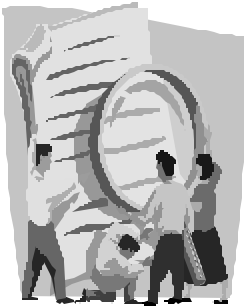
- Reduction in fresh water use per unit product by 19%;
- Reduction in fuel oil use per unit product by 30%; and
- Reduction in wastewater per unit product by 32%.

These efforts have saved the medium-sized firm approximately US \$186,000.

<http://www.murauerbier.at>

What is Environmental Management Accounting (EMA)?

Murauer Bier of Austria implemented Environmental Management Accounting (EMA) to get a comprehensive and accurate view of both materials use and waste costs at the firm. Different organizations have given EMA different definitions (and even names), but in essence ... ***EMA is simply a better and more comprehensive approach to management accounting, with a particular focus on costs related to wasted raw materials and other environmental issues.*** Key points are:



- EMA focuses on costs internal to the company; EMA does not include costs to society or the environment for which a company is not held accountable.
 - EMA places particular emphasis on accounting for environment-related costs such as waste management costs and the lost value of wasted raw materials.
 - EMA encompasses not only cost information, but also information on quantities, flows and disposal of materials and energy.
 - EMA information is valuable for many types of management activities or decisions, but is particularly useful for environmental management.
- EMA's main use is typically for internal management and decision-making, but EMA information is increasingly being used for external reporting purposes in financial reports or annual environmental reports.

What are the Potential Uses and Benefits of EMA?

There are several reasons for the development of EMA in recent years:

- The need for operational and materials efficiency gains, driven by a competitive global market.
- Increases in costs for raw materials, waste management, regulatory compliance, and potential liability.
- Increasing pressure on business to improve environmental performance.
- The limitations of some conventional management accounting approaches for management of efficiency and environment-related costs.



EMA allows businesses to better respond to these pressures by helping them to:

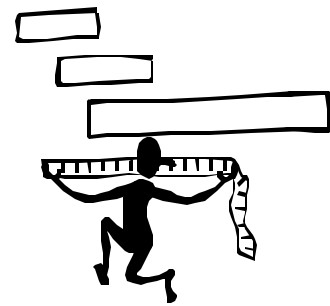


- More accurately track and manage raw materials, energy, and wastes.
- More accurately identify, estimate and manage costs, particularly costs of wasted raw materials and management of waste streams.
- Better identify and estimate the financial and other business benefits of environmental management activities.
- Better measure and report environmental and financial performance, thus improving company image with customers, investors, financial institutions, employees, communities, environmental organizations, and government.

EMA data are particularly valuable for management activities with an environmental focus, and the range of decisions affected by environmental issues and costs is steadily increasing. EMA has therefore become important not only for environmental management decisions, but for *all* types of management activities. In other words, *the focus of EMA is on making not only better environmental management decisions but also better management decisions in general.*

Management Activities that Benefit from EMA

- Cost Allocation
- Cost Management
- Inventory and Production Planning
- Investment Appraisal
- Performance Evaluation and Benchmarking
- Product/Service Design
- Product/Service Mix
- Product/Service Pricing
- Purchasing
- Supply Chain Management



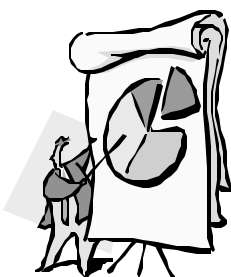
EMA is already in use by leading companies in many countries ...

EMA can benefit both small and large firms in many sectors, including resource extraction, manufacturing, and service sectors. Companies in many countries are implementing EMA, including Australia, Austria, Canada, Colombia, the Czech Republic, Denmark, Egypt, Finland, Germany, Italy, Japan, the Republic of Korea, the Netherlands, the Philippines, Portugal, the United Kingdom, the United States, Sweden, Tanzania, Zimbabwe, and many others.

Only a few examples of the many noteworthy EMA efforts by companies around the world could be included in this brochure. An example of the value of EMA to the Austrian firm Murauer Bier is given above. The following boxes give examples of how EMA benefits two other companies.



EMA for Supply Chain Management



Raytheon, an electronics and aerospace company located in the United States, has used EMA to support a supply chain initiative with both financial and environmental benefits. First, the company mapped the flow of a set of priority materials and wastes through one of its facilities and did a cost analysis that revealed materials management costs of \$1 for every dollar of materials purchased.

The EMA analysis was repeated at a number of other Raytheon facilities and the information was used to negotiate the goals and costs of a materials management contract with a supplier, Radian International, now part of Haas TCM. Haas

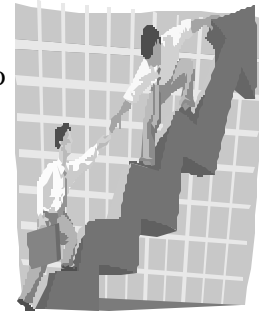
TCM is now responsible for all materials management activities at over 30 Raytheon facilities, and the contract gives HAAS TCM financial incentives to help Raytheon achieve waste and cost reductions in its operations. Benefits of the program to Raytheon have included: significant scrap reductions; savings of \$688,000 per year; streamlined purchasing and delivery of chemicals; and others.

http://www.chemicalstrategies.org/case_studies.htm

Votta, T., Broe, R., Kauffman-Johnson, J., and White, A. "Using Environmental Accounting to Green Supplier Contracts", *Pollution Prevention Review*. Spring 1998.

Valuing and Reporting Environmental Activities

Ricoh is a Japanese company that manufactures and provides services related to equipment such as office copy machines, other office information equipment, and optical equipment. Ricoh uses the materials and energy tracking capacity of EMA for its corporate operations in an approach called an *“Eco Balance”*. The financial side of EMA at Ricoh is called *“environmental accounting”*, which is the term most commonly used in Japan.



Ricoh uses the EMA information it gathers to plan activities in areas such as resource conservation and recycling, energy conservation, and pollution prevention. In addition, Ricoh is able to estimate the total costs and benefits of the company’s environmental activities. In 2000, Ricoh estimates that it spent about US \$66 million on environmental management activities, with resulting benefits to the company of US \$79 million. Ricoh makes much of its EMA information publicly available through the company’s annual environmental report.

Ricoh Group Annual Environmental Report, 2000

<http://www.ricoh.co.jp/ecology/e-/report/index.html>

Different EMA Approaches



There is more than one approach to EMA. For example, a company that wishes to focus on process efficiency improvements would need to prepare process-level materials and energy flow maps and collect cost data from a variety of data sources including, but not limited to, the cost accounting system. In contrast, a company that wishes to first perform a facility-wide assessment of environmental costs before proceeding to more detailed analyses may be able to extract relevant data from the existing profit and loss account.



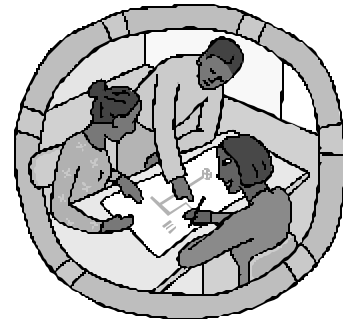
Companies may also select different approaches to EMA based on the resources available and past experience of the company with EMA. For example, a company that has never tried EMA or that has limited resources may choose to do one or two small-scale EMA case studies as a first step. Once the benefits of EMA have been demonstrated, the company can move on to more comprehensive projects, perhaps setting up an EMA database in parallel with the existing management accounting and information systems, or perhaps integrating EMA information into the existing systems. The approach chosen will depend partly on the organization's existing accounting, information, and management systems, all of which should be used to support EMA and, in turn, may be improved by EMA.

What are Your Next Steps?

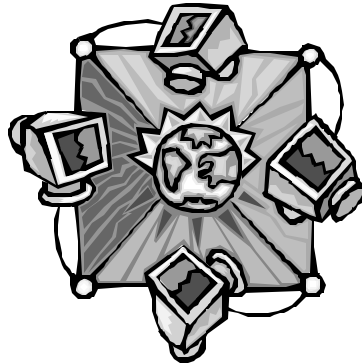
First of all, think about whether or not your company has good estimates of:

- The amount and value of raw materials lost in the form of waste (e.g., in wastewater, solid waste, air emissions)
- The true costs of waste management (e.g., costs of waste handling, recycling, disposal, and treatment)
- Related items such as insurance costs, potential environmental liability, and the likely costs of future regulation

If you do not have this information readily available, or if you are not sure how good your estimates are, consider designing and implementing an EMA project. Reap the benefits of improved economic and environmental performance that EMA can bring.



For More Information



For more information on the work of the United Nations Expert Working Group on EMA and to download publications by the group, including a workbook on “*EMA Procedures and Principles*”, please visit ...

<http://www.un.org/esa/sustdev/sdissues/technology/estema1.htm>

The workbook can also be purchased in printed form through the UN publications website at ...

<http://www.un.org/Pubs/catalog.htm>

For information on a broad range of EMA materials such as guidebooks and case studies as well as information on EMA contacts, networking opportunities, website links and events, check the new International Website on EMA at ...

<http://www.EMAwebsite.org>

For information on EMA networking opportunities in your region of the world, contact the regional chapter of the Environmental Management Accounting Network (EMAN) nearest you:

- EMAN Europe — <http://www.eman-eu.net>
- EMAN Asia-Pacific — <http://www.eman-ap.jp>
- EMAN Americas — a chapter is being formed - send email to info@emarc.org

Also try contacting local or regional accounting associations for information on any EMA-related activities they might have.

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