

Specialty Glass, Inc.: Cost Accounting and Hazardous Wastes

Teaching Note

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This case has been taught to many different audiences: cost-accounting undergraduate and Master's students, MBA students in environmental management and environmental accounting classes, engineering students, corporate managers, and regulatory agency representatives. The case has been successfully used: (i) as a follow-on discussion to a brief lecture on how keeping costs in manufacturing overhead can distort management's understanding of their products' manufacturing costs, but, preferably, (ii) as a springboard for discussing financial risks and liabilities that are often ignored in traditional costing systems (i.e., neither included in overhead nor traced directly to specific product lines), and (iii) as an opportunity to discuss options available to small and medium-size businesses with limited capital for addressing substantial environmental impacts arising from their operations.

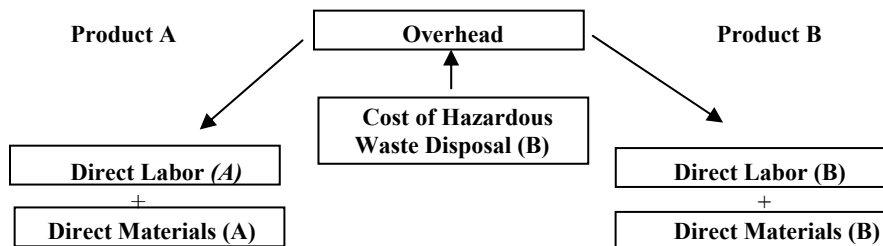
This teaching note was prepared by Dr. Christine H. Stinson, Associate Professor of Business Administration, Darden Graduate School of Business Administration, University of Virginia. The case is intended to serve as the basis for class discussion rather than as an illustration of effective or ineffective management strategies. It is based on material collected for Green Ledgers: Case Studies in Corporate Environmental Accounting, a 1995 publication of the World Resources Institute (WRI), edited by Daryl Ditz, Janet Ranganathan, and R. Darryl Banks. Copyright © 1998 World Resources Institute. Not for citation, distribution, or duplication without permission of WRI.

Discussion Questions

1. Specialty Glass includes the cost of waste disposal in overhead. Would Specialty’s estimate of the “true cost” of producing different products change significantly if this cost were traced directly to the various colored glasses according to the cost of disposing of the different ashes?

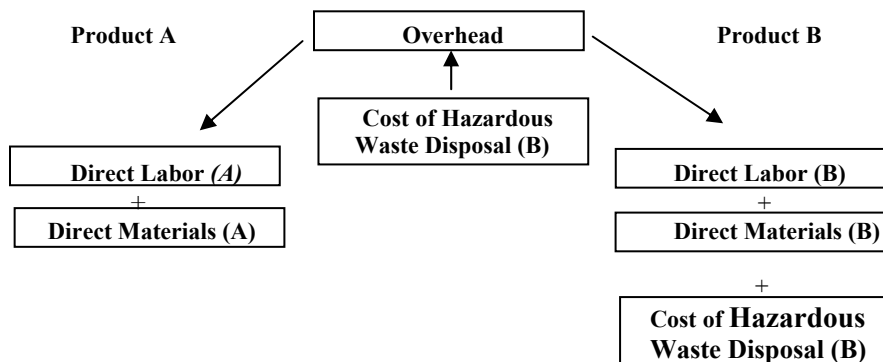
Because it uses cadmium, the manufacture of ruby-red glass generates a more hazardous waste than does the manufacture of other glass products. However, Specialty does not price its ruby-red glass to reflect the higher waste-disposal costs, a practice that, in theory can lead to understating the costs of production that generates hazardous wastes and similarly overstating the costs of production that does not yield hazardous wastes (Todd 1994, Hamner and Stinson 1995). Figure 1a (after Todd 1994) illustrates this problem; Figure 1b shows how a more accurate costing system would trace production-related costs.

Figure 1a. Cost Accounting When Environmental Costs Are Negligible



However, when hazardous waste disposal costs are not negligible, “conventional” accounting yields inaccurate “total costs” of both products; A appears to cost more to manufacture than it actually does while Product B appears to cost less than it does.

Figure 1b. Cost Accounting When Environmental Costs Are Not Negligible



Putting large costs (environmental or otherwise) that are generated by one specific process into an overhead account that is allocated across several processes can distort internal estimates of process and product costs. Here, even though Specialty Glass did not trace the cadmium waste-disposal costs directly to the ruby-red glass manufacturing process, this costing “error” seems unlikely to understate the costs of

producing ruby-red glass substantially.

Total annual sales were \$12 million. For the sake of discussion, assume that Specialty Glass averaged a 10 percent markup. With \$12 million in annual sales, the total cost of goods sold (COGS) was then about

$$\$12,000,000 / 1.1 = \$10,909,091$$

and its annual profits were \$1,090,909.

If ruby-red glass comprised only 1 percent of Specialty's annual production, then its annual production cost under Specialty's current cost accounting was

$$0.01 \times \$10,909,091 = \$109,091$$

Adding a 10 percent markup gives a total annual ruby-red glass sales of \$120,000.

Specialty's annual hazardous-waste disposal costs were approximately \$32,500. To facilitate discussion, assume that all of Specialty's colored glass was sold for the same price per square foot and that cadmium (from the production of ruby-red glass) was the only hazardous component of Specialty's wastes. If ruby-red glass comprised only 1 percent of Specialty's total annual production, and if *all* hazardous-waste disposal costs are included in the cost of producing ruby-red glass, the estimated cost of producing ruby-red glass becomes

$$[0.01 \times (\$10,909,091 - \$32,500)] + \$32,500 = \$141,266$$

a figure 29 percent higher than the COGS estimate for ruby-red glass under the current accounting system. If Specialty was selling ruby-red glass for 10 percent more than its currently estimated COGS, then it was losing \$21,266 ($= \$141,266 - \$120,000$) annually on the sales of this product.

If Specialty changes its cost-accounting method to trace *all* hazardous-waste disposal costs directly to ruby-red glass,

and raises its price for ruby-red glass to give a 10 percent markup,

and does not change the prices of its other products,

and if the heroic assumption is made that demand for ruby-red glass is sufficiently inelastic so that this price increase does not reduce demand for ruby-red glass,

then Specialty's annual profits would increase by about

$$[\$141,266 \times 1.1] - \$120,000 = \$35,393$$

or about 3.3 percent (of \$1,090,909). The percentage increase in profits would be *lower* if ruby-red glass comprises a larger percentage of Specialty's total production,¹ if other colored-glass products also generate some of the hazardous wastes, or if the higher price for ruby-red glass lowers consumer demand for the product.

2. Was Specialty incurring other environmental costs? If so, what were they? Would Specialty's estimate of the "true cost" of producing different products have changed significantly if these costs were traced directly to each different glass product?

¹ If ruby-red glass comprised a larger percentage of annual sales (e.g., 5 percent), directly charging all hazardous-waste disposal costs to ruby-red glass and then adjusting the price charged for ruby-red glass accordingly would have a smaller effect on net profits. The internally estimated cost of production would increase by about 5.7 percent (from \$545,455 [= 0.05 x \$10,909,091] under Specialty's current cost accounting) to \$576,330 (= \$545,455 + [.95 x \$32,500]). Without correcting its cost accounting, Specialty would still be making a profit of about \$29,731 (= [\$545,455/0.9] - \$576,330) annually on its ruby-red glass (i.e., a "true" profit margin of about 5.2 percent). If the price for ruby-red glass were increased to generate a 10 percent profit margin (and with the other assumptions made in the text), Specialty's annual profits would increase by about 3.1 percent (= {[\$576,330/0.9] - [\$545,455/0.9]} / \$1,090,909).

Review all human-health and environmental contamination issues with cadmium.

Liabilities Arising from Past Events

Specialty Glass faced a potentially large liability arising from the cadmium-laden smoke that the facility had emitted since at least 1979. The company faced potential legal liability for damages to human health, public and private property values, and animal (e.g., livestock) health as well as for the cost of cleaning up cadmium-contaminated soils in the areas downwind from its plant. Note that *current* pricing practices will have no effect on the magnitude of these liabilities accrued from past activities.

If cadmium emissions are currently controlled, no short-term incremental cost (other than the waste-disposal costs discussed in the first question) will be created by the continued use of cadmium at Specialty Glass.

Liabilities Arising from Current and Future Events

Only one facility in the entire United States now accepts cadmium-contaminated ash. The cost of disposing of this hazardous waste is not just the billed disposal cost per se, but it also includes the expected cost of any accidents occurring during handling, transportation, and ultimate disposal of this ash. This cost is difficult to estimate, but clearly a single accident could be costly. If Specialty Glass's hazardous-waste transportation contractor is unable to pay for cleanup of accidental spills during transportation, the remaining cleanup liability would be transferred to Specialty Glass. These *potential* costs were not considered in determining the cost of producing ruby-red glass.

3. Specialty Glass was owned by one individual. This fact was reflected in the limited information available about different product costs, relative profitability of the products, and the company's business risks. If Specialty Glass were publicly traded (or if the current owner wanted to undertake an initial public offering of shares in the company), what financial and business risk (including environmental risk) disclosures would be required?

GAAP Disclosure Requirements

Not yet identified as a Potentially Responsible Party for cleanup of hazardous waste sites, and facing no known law suits, Specialty probably would not *have* to establish accrual for cadmium-related contingent liabilities in financial accounting reports. Even the 1996 AICPA (American Institute of Certified Public Accountants) guidance would not require an accrual account. A knowledgeable auditor might issue a going-concern statement or (more likely) turn down an audit engagement as too risky.

SEC Disclosure Requirements

SEC disclosure requirements are stricter and they could be read as requiring disclosure in MD&A.

4. What options did Specialty Glass have with respect to the environmental issues? What were the financial and strategic strengths and weaknesses of each of these options?

Can owners shield themselves from personal liability for actions of the corporation? CERCLA (Comprehensive Environmental Response, Cleanup and Liability Act, or "Superfund") liabilities pierce the veil of corporate ownership; if the corporate entity cannot pay for required cleanup, controlling shareholders (in this case, the single owner) may be required to pay for the cleanup from their personal assets. If the liabilities from past use of cadmium are not CERCLA-related, the owners may be protected from personal bankruptcy by the "veil of the corporation."

Under current regulations controlling the production of cadmium wastes, Specialty can continue to mix ash from ruby-red and other colored glasses. If cadmium use becomes prohibitively expensive, ruby-red

glass may well be dropped from Specialty's production.

What are the company's options?

- Do nothing (risk being closed),
- Move out of the United States,
- Stop producing ruby-red glass (does not deal with possible liabilities from past production),
- Continue producing ruby-red glass but include the costs of concomitant business risks in the price of ruby-red glass,
- Apply for a TSD (treatment, storage and disposal) permit to treat cadmium ash on site (and, possibly, consider collecting and treating similarly hazardous wastes from other local firms as a new line of business),
- Investigate the latency period of cadmium poisoning as a first step in investigating potential liabilities from (currently nonexistent) lawsuits,
- Investigate insurance coverage for any past, current, or future health-related liabilities, and
- Sell the company and its potential liabilities fast.

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