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# Accounting Through Green-Colored Glasses: Teaching Environmental Accounting

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**ABSTRACT:** Many firms are finding that some of their most costly and challenging accounting problems are in the environmental area. Environmental accounting can be defined simply as understanding, recognition and incorporation of the impact of environmental issues upon a firm's traditional accounting sub-systems. This paper describes how environmental accounting issues can be incorporated into existing courses or made the focus of a new elective. Environmental accounting issues provide an interesting, contemporary and functionally integrative way to help students understand the relation among the different areas of accounting (i.e., financial, managerial, information systems, auditing and tax). Examples are included that describe environmental issues in each of these areas.

**T**HE major thrust of the Accounting Education Change Commission's (AECC) recommendations is to broaden the scope of accounting education.<sup>1</sup> The traditional approach to teaching accounting has been to provide students with a rule-oriented taxonomy where textbook-style problems fit neatly into specific topical cells. Many educators feel that this approach has become inadequate for the increasingly complex accounting issues that students will have to address throughout their careers. Classroom boundaries established between financial, managerial and other accounting subdisciplines can interfere with students learning to incorporate information from each of these areas into decision making. Few real-world accounting problems today can be conveniently compartmentalized into a single accounting subdiscipline or methodology. Available solutions should not constrain approaches to problem solving;

rather, the problem should drive the solution approach. As accounting educators, we must prepare our students to respond to accounting issues in this fashion. The most important skill we can teach our students is to evaluate

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<sup>1</sup> See the AECC (1992) Exposure Draft on defining, evaluating and rewarding effective teaching.

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accounting problems critically and consider multiple approaches in the process of their analysis. Because environmental issues affect all areas of accounting, they provide a particularly effective vehicle for illustrating how to integrate information and approaches from multiple accounting areas—thereby giving students a deeper and broader understanding of accounting theory and its application.

Incorporating environmental accounting issues into accounting curricula can broaden the scope and impact of accounting education in a manner consistent with the AECC's recommendations. In this paper, we provide examples of topics that can be used to incorporate environmental accounting issues into existing accounting classes.<sup>2</sup> Specifically, we discuss how environmental issues can be incorporated into existing courses covering financial accounting, managerial accounting, information systems, auditing or tax. Examples are included that illustrate environmental issues in each of these areas. Although each subdiscipline is addressed separately, we also consider interactions among the areas. We further discuss some advantages of creating a stand-alone Environmental Accounting elective. Finally, the appendix presents selected environmental accounting issues that arise in many of the available cases. These examples are included to illustrate how environmental accounting facilitates discussion of fundamental accounting issues while highlighting the integrative nature of the accounting function.

## BACKGROUND

In the academic accounting literature of the 1970s, "environmental accounting" was considered part of the more general area of "social accounting" (e.g., Belkaoui 1976; Ingram 1978; Ramanathan 1976; Rockness et al. 1977;

Spicer 1978). Possibly because there were few explicit economic or legal consequences associated with social accounting, broad academic interest in this area soon faded. However, in the past decade there has been a substantial increase in international, federal, state and even local environmental regulation, as well as a dramatic increase in the number of lawsuits arising from violation of environmental laws and regulations. Because these changes affect all areas of accounting (and other business practices as well), consideration of "Environmental Accounting" provides students with an opportunity to examine how accounting practices respond to new legal, economic, regulatory and even ethical pressures. Furthermore, firms are becoming more interested in developing and improving their own environmental accounting strategies and systems (Schmidheiny 1992). Arguably, a key difference between successful and unsuccessful firms of the future will be how quickly and effectively they respond to this new challenge. Because environmental strategies and systems are becoming so important in the competitive marketplace, sensitizing our students to environmental issues in the accounting curriculum provides a good opportunity to meet that challenge.

Critics (and cynics) view the term "environmental accounting" as an oxymoron. However, a more appropriate characterization is that the term is a juxtaposition of two, once unrelated,

<sup>2</sup> It is worth noting that these are truly substantive issues. In cost accounting, misunderstanding of environmental costs can lead to gross distortions in estimated product costs (Ditz et al. 1995; Hamner and Stinson 1995). Similarly, with changing regulatory and legal environments, environmental issues can have an extraordinarily large effect on GAAP accounting reports. For example, following the Valdez oil spill, Exxon made a \$1.68 billion provision in its 1989 income statement (representing 36 percent of earnings before special charges).

disciplines. Still, a clear definition is somewhat elusive. In our view, environmental accounting is *not* "accounting for the environment," or a course in how to value "natural" assets like old-growth timber or the spotted owl. It is not a course in how to prepare an Environmental Impact Statement. Further, it is important to differentiate this new concept from the classical concept of Natural Resource Accounting and its macroeconomic perspective. At a basic level, Environmental Accounting is a course (or subject) that investigates how environmental issues affect traditional accounting subdisciplines. Thus, in some grander sense, it is a new and extremely powerful tool for the myriad of firms addressing measurement and valuation problems in the environmental area.

Some may fear that characterizing the environment with numbers or incorporating environmental impact in the bottom line would co-opt ethical and moral imperatives. However, through environmental accounting, an attempt is made to provide better input into the decision making process about environmental impacts. For example, in a capital budgeting context incorporating environmental issues may change the focus of decision making. When the additional costs of remediating a polluted site following operation of "dirty" equipment are included in analysis of the cost of such equipment, decision makers may shift toward more "environmentally friendly" technologies. Use of environmental accounting techniques can thereby help firms move toward a preventative rather than curative approach to environmental problems.

The remainder of the paper explores environmental issues within the accounting subdisciplines and investigates some of the synergies among them that are facilitated through the study of environmental accounting.

## FINANCIAL ACCOUNTING

Inclusion of environmental issues can enhance classroom discussion of basic Financial Accounting issues such as definition and measurement of assets and liabilities. In particular, three generic areas can be explored within an environmental context: (1) capitalization versus expensing of costs; (2) disclosure and recognition of contingent liabilities; and (3) mandatory and voluntary disclosure practice.

Several technical accounting rules guide the financial reporting of environmental concerns. Some of the major standards and guidelines addressing environmental issues include: Statement of Financial Accounting Standards (SFAS) No. 5 on contingent liabilities (1975); Financial Interpretation (FIN) No. 14 on interpreting SFAS No. 5 (1976); SFAS No. 38 on pre-acquisition contingencies of purchased enterprises (1980); Emerging Issues Task Force (EITF) Issue No. 89-13 on accounting for the cost of asbestos removal (1990); EITF Issue No. 90-8 on capitalizing versus expensing costs for remediation of environmental contamination (1991); EITF Issue No. 93-5 concerning the treatment of potential recoveries (from other private parties or insurers) and discounting of environmental liabilities (1993). For publicly-traded companies, the Securities and Exchange Commission (SEC) has also mandated environmental disclosures. These include, among others, additional disclosures in the management discussion and analysis (MD&A) portion of annual filings; SEC Financial Reporting Release (FRR) No. 36 concerning interpretation of MD&A disclosure rules (1989), and SEC Staff Accounting Bulletin (SAB) No. 92 concerning accounting and disclosure for certain loss contingencies, primarily those relating to environmental costs (and warranties) (1989). Most recently, the American Institute of Certified

Public Accountants has issued a Statement of Position (SOP). The SOP clarifies application of SFAS No. 5 (1975) and FIN No. 14 (1976) and identifies certain regulatory benchmarks to help determine when liabilities must be recognized (see Gill 1995 for a review).

Course topics related to these regulations could include accounting for containment of environmental contamination and treatment costs; estimation and recognition of contingent environmental liabilities; and disclosure of pending or threatened legal action and of material effects of environmental compliance on capital expenditures, earnings and competitive position. In addition to covering technical procedures, implications of financial accounting rules for firm valuation, stakeholder wealth and managerial incentives could be explored. Costs associated with remediation can illustrate the paradoxical nature of the accounting process. For example, a conservative bias in financial accounting generally leads to remediation costs being expensed.<sup>3</sup> However, many of those same costs (e.g., asbestos removal or installation of a containment barrier) are required to be capitalized for tax purposes, thereby deferring or even precluding (when capitalized to land) their deductibility.

Consistent with AECC recommendations, these topics facilitate discussion of the economic consequences of accounting pronouncements. For example, promulgation of accounting rules can be viewed as a political process. Accounting rules frequently reflect a compromise or economic trade-off between different parties competing for scarce resources. Financial statement users demand more and better disclosures about the firm and its activities. The firm and its management, however, may resist revealing proprietary information if disclosure is viewed as costly and potentially compromising. Managers thereby have incen-

tives to manage their voluntary disclosure policy which may make the resulting disclosures less useful. On the other hand, some evidence indicates that stock returns are positively correlated with certain voluntary disclosures of environmental exposure (Blacconiere and Patton 1994). Discussion of market-based empirical research (e.g., stock price reaction, market valuation, firm performance, management compensation, etc.) on environmental disclosures can extend students' appreciation of the impact and pervasiveness of environmental accounting issues by providing evidence on the value-relevance and usefulness of the disclosures.<sup>4</sup> In addition, many firms have begun voluntarily issuing Environmental Annual Reports. Although there are no formal standards governing these reports, they typically summarize the environmental impact of their businesses. The content of environmental annual reports ranges from qualitative description to quantitative reporting of environmental activities; it also appears to span the continuum from mere "greenwash" to genuine fiscal commitment. Classroom discussion of this type of voluntary disclosure can center on the format, content, and potential relevance of these reports to the firms' many stakeholders.

### MANAGERIAL ACCOUNTING

Some of the more interesting environmental accounting challenges faced by practitioners are in the managerial accounting area, although the basic techniques currently taught in accounting classes still apply or can be adapted. Four main managerial accounting topics that can be explored within an

<sup>3</sup> EITF Issue No. 90-8 (1991) identifies three conditions under which capitalization of remediation costs is allowed.

<sup>4</sup> For example, see Spicer (1978), Ullman (1985), and Campbell et al. (1995).

environmental context are: (1) product costing and allocation of overhead costs (e.g., as in activity-based costing); (2) capital budgeting; (3) responsibility accounting; and (4) life cycle analysis. In a recent book that surveys environmental policies of over 100 leading companies, Epstein (1996) identifies “state-of-the-art” practices for costing and managing corporate environmental strategy.

Environmental accounting applications in managerial accounting cases provide students an opportunity to solve problems in unfamiliar, but contemporary, settings. For example, hazardous waste disposal costs are often simply accumulated in a general overhead account. This treatment can adversely affect product costing decisions, production decisions and management performance evaluation if only a few of the firm’s product lines generate the waste (Hamner and Stinson 1995). Appropriate tracing of costs can create incentives for managers to reduce associated costs— incentives that would not exist if costs were simply allocated over all products. The World Resources Institute (Ditz et al. 1995) has collected several comprehensive case studies illustrating the magnitude of environmental costs for 11 different corporations.

The environmental setting is ideal for critical evaluation of alternative managerial accounting methods and their behavioral implications. Environmental issues can be used to frame discussion of decision-making processes and management’s planning and control functions. The impact of environmental concerns can be investigated in the areas of responsibility accounting, job costing and overhead allocation, variance analysis, cost behavior and analysis, and capital budgeting. Potential modifications to traditional cost/benefit analysis include estimating future liabilities arising from current and proposed production technologies.<sup>5</sup> Environmen-

tal cost management and allocation, identification and assessment of existing and potential environmental problems and risks, and communication of this information, both internally for decision making and externally for compliance, also can be included. A methodology relatively new to accounting, is life cycle analysis (LCA). LCA encourages the “explicit acknowledgment and recognition of the full life cycle of any product or activity...” in accounting decision-making. See Gray et al. (1993, chap. 9) for discussion. The political/economic debate, for example, between cloth and paper diapers as captured in the conflicting LCAs sponsored by the paper and cloth diaper industries can illustrate the strengths and weaknesses of the LCA technique.

Classroom discussion of managerial accounting issues can be linked easily to financial accounting, tax and other issues. Environmental strategies chosen by a firm may affect both the current and future health status of employees and other stakeholders (see for example, the MultiPaint, Inc. case by Bowen et al. 1996). Another example is accounting for environmental mitigation costs associated with building new facilities. Communities, states and national governments commonly require firms to pay for road improvements, new sewer systems, etc., in exchange for building permits. The Boeing Corporation’s grappling with differing potential treatments of these mitigation costs by its financial, managerial and tax accounting systems is a real-world example of how different accounting subsystems can view the

<sup>5</sup> For both legal and financial-reporting reasons, companies may be reluctant to prepare *quantitative* estimates of future liabilities. Grimsted et al. (1994) suggest one method for qualitatively ranking the human health and ecological impact of different waste streams.



same event from very different perspectives (Soderstrom and Stinson 1995).<sup>6</sup>

### ACCOUNTING INFORMATION SYSTEMS

One of the accountant's most important tasks is to ensure that managers have the necessary information to make decisions. In the systems area, a far-reaching discussion can start with system analysis and design within the systems development life cycle. To ensure that environmental concerns are properly addressed within an information system, they must be incorporated into the system design process. Because all future requirements cannot be anticipated and regulatory requirements are constantly in flux, the system must be sufficiently dynamic and flexible to meet changing needs. Within this context, the role of an environmental specialist throughout the systems development life cycle can be discussed. In systems design lectures, advantages of alternative design features can be explored. For example, class discussion can address the benefits of using more flexible systems such as database management systems or table lookup systems, instead of traditional file processing systems.

For a more technically-oriented Accounting Information Systems class, environmental accounting issues provide excellent opportunities for detailed system design projects. Environmental regulations frequently result in requirements for firms to develop new systems. For example, under the Resource Conservation and Recovery Act, a Material-Safety Datasheet (MSDS) must be available for all materials or products containing specified (hazardous) chemicals. MSDSs contain information about materials, including proper handling and potential dangers associated with use of the products. They must be distributed to each customer and updated at least annually. Accounting Information Sys-

tems issues that can be addressed include: (1) how to design an information system to satisfy the requirements; (2) potential interface/integration of environmental information systems with existing financial reporting systems; (3) understanding how system costs feed into the managerial accounting system; and (4) designing auditability into the system and fitting audit of the system into the firm's overall audit program.

### AUDITING

Internal controls are the basic tools that firms have to increase the reliability of accounting information and protect their assets. Auditors must rely heavily upon the firm's control structure. In fact, one of the first tasks in most audits is a test of controls. When the basic idea of internal control is introduced in the classroom, environmental internal controls could be used to illustrate a control system. For example, many firms have developed an extensive audit trail to track hazardous materials from the time they enter the firm until final disposal.

The environmental area also provides opportunities to enhance discussion of the audit process. There are many types of environmental audits (CH2MHill 1993), including due diligence and compliance audits, which closely parallel operational and Electronic Data Processing (EDP) audits. Different types of audits and the benefits of having an (environmental) audit program can be discussed. Using environmental audits as examples may also increase the level of student interest in the material.

<sup>6</sup> Another real-world example of how a company is reacting to the increased pressures of environmental responsibility is the Polaroid case by Barth et al. (1994). The case allows discussion of "...how environmental responsibilities affect management accounting, financial reporting, and management control."

Class discussions can explore implications of environmental audits. Because an environmental audit can include assessment of new risks and estimation of potential liabilities, the firm may be required to increase disclosure of contingencies in its financial statements. With more onerous disclosure requirements, there is increased risk of a negative audit opinion from the firm's external auditors. The potential for additional liability due to information revealed in the course of an internal audit is not limited to the environmental arena; however, using environmental examples is a particularly effective way to illustrate this risk.

In addition, discussion of environmental audits can be used to illustrate how auditing can help manage risk and reduce exposure to liability. Most banks now require "due diligence" audits (or site assessments) before approving loans for commercial properties. Prior to this type of policy, many banks found themselves liable for cleaning up contamination found on properties for which they had lent money or foreclosed. Legal defense costs, alone, have frequently exceeded the value of the loan (Hector 1992). With implementation of an audit policy, however, banks can significantly lower the probability that they will be faced with an environmental cleanup.<sup>7</sup>

The response of regulators to the existence of an audit program within the firm can also be considered. It is possible that firms may be less heavily penalized for noncompliance if they have an internal audit program in place and demonstrate "good faith" intent to adhere to (environmental) regulations. Alternatively, regulations which let regulators see (and base penalties upon) completed environmental audits can actually discourage firms from conducting environmental audits (Moore 1992; Mishra et al. 1995). The potential for invoking client/attorney (firm/environmental auditor)

privilege in order to protect the firm can be discussed as a means of limiting the potential for negative consequences of an audit. Other strategies, such as using the work product doctrine or self-evaluation privilege, can also be discussed.

As in the other accounting subdisciplines, incorporation of environmental accounting issues and topics into the auditing area can help achieve AECC goals for expanded curricula. Auditing environmental cleanup costs or treatment expenditures demonstrates the need for programs to cover a broad knowledge base. There are both legal uncertainties and measurement issues raised when auditing environmental exposure. Barth and McNichols (1994) illustrate the difficulty of estimating future remediation expenditures.

## TAX

The lack of resolution in the tax treatment of environmentally related expenditures creates an excellent opportunity to explore basic issues in taxation. Questions of capitalization versus expensing, deductibility of fines and penalties, and the determination of tax law and policy can be discussed. For a technically-oriented tax class, at least three basic topics can be covered: (1) a review of environmental taxes imposed by the U.S. Federal government, other national (e.g., European) taxes, and common U.S. state and local environmental taxes; (2) a review of the economic effects of different types of environmental taxes; and (3) case studies illustrating how tax considerations can affect different types of investment, financing or operating decisions.

<sup>7</sup> In addition, banks' heightened risk of incurring costs due to (subsequent) environmental damage to the property caused by borrowers may result in limitations on the type of loan banks are willing to extend.

In the United States, the Internal Revenue Code (IRC) contains a number of environmental taxes. The federal Oil Spill Liability Trust Fund is funded by a five cents per barrel tax on crude oil received at U.S. refineries and on petroleum products entering the U.S. (IRC §4611, §9509). The Leaking Underground Storage Tank Trust Fund is funded by federal taxes on fuel products (IRC §9508). The Hazardous Substance Superfund (IRC §9507) is funded by taxes on crude oil and petroleum products (IRC §4611) and certain chemicals (IRC §4661, §4671) as well as a 0.12% additional tax on any corporation's modified alternative minimum taxable income in excess of \$2 million (IRC §59A). The "Superfund" tax currently collects over \$2 billion per year in revenues. There are also specific taxes on certain ozone-depleting chemicals, with allowances for recycling of these chemicals (IRC §4681).

In addition to specific taxes, there are tax regulations which affect firms' decisions about environmental matters. The IRS is currently treating many site clean-up costs incurred under the 1976 Resource Conservation and Recovery Act (RCRA) and the 1980 Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA or "Superfund" Act) as deductible; however, this treatment is fairly recent (Revenue Ruling 93-38, June 2, 1994) and may change in the future. Also, although certain pollution control facilities can be depreciated at favorable rates for federal tax purposes (IRC §169), this favorable treatment is recaptured for corporations paying the Alternative Minimum Tax. Either of these topics can support discussion of how uncertainty in tax treatment of site cleanup or investment in new facilities affects the economic analysis of business decisions.

Environmentally-related national taxes are not unique to the United

States. Several European countries have instituted environmental taxes. Introduction of environmental tax issues may be a convenient way to incorporate international tax accounting and global business problems into the accounting curriculum. Also, many European proposals (e.g., the European Community proposal for taxing carbon emissions) have and will influence debate over U.S. tax policy.

Once again, there are opportunities in the tax subdiscipline to incorporate environmental accounting topics and achieve educational benefits consistent with the AECC's recommendations. Further, specific environmental taxes can be used to illustrate the impact of taxation (or regulatory/political intervention in general) on both financial and managerial decisions.

### **TEACHING A SEPARATE ENVIRONMENTAL ACCOUNTING ELECTIVE**

Accounting programs at some U.S. and Canadian universities have recently expanded their curricula to include stand-alone electives in Environmental Accounting. Although all of the topics in such an elective can be addressed within existing courses, there are several reasons for considering offering a separate elective. First, a successful Environmental Accounting elective offers a capstone accounting course that uses contemporary topics to review and integrate all areas of accounting. Second, in the authors' experience, Environmental Accounting electives attract not only accounting majors, but also students from engineering, law, public policy and general business programs. This diversity forces students from different educational backgrounds and pedagogical perspectives to communicate effectively and exchange ideas with one another. For accounting students, this serves as



an introduction to the future challenge they will face when they are teamed up with co-workers from other functional areas who have drastically different tools, approaches and responsibilities. Finally, as noted earlier, Environmental Accounting electives seem to attract new students to accounting courses; thus, this elective can be offered without "cannibalizing" other accounting electives. Some interested faculty members may be concerned that they lack the expertise in environmental science to lead such a course. However, supportive teaching materials (e.g., the Management Institute for Environment and Business (MEB) case book) are becoming sufficiently numerous that we suspect any motivated faculty member could offer such a course after a summer's preparation. The authors of this article have taught successful Environmental Accounting electives at two major universities; our syllabi are available on request.

### CONCLUSION

Incorporating environmental accounting issues into accounting curricula broadens the scope of traditional accounting education as recommended by the Accounting Education Change Commission. In this paper, we identify some environmental accounting issues that can be incorporated either into existing accounting classes or into a new stand-alone elective in Environmental Accounting.

In an editorial entitled, "There's Trouble Right Here in Our Accounting Programs: The Challenge to Accounting Educators," Patten and Williams (1990)

identify seven agenda items that are necessary if accounting educators are to respond to the needs of the future profession. Incorporation of environmental accounting into a student's educational experience explicitly achieves at least four of their goals. In particular, it broadens the undergraduate curriculum; its comprehensive nature is conducive to making "learning to learn" a primary classroom objective; and its contemporary relevance and urgency may attract additional high-quality students with diverse backgrounds to careers in accounting. Finally, integration of environmental issues into the systems area makes students contend with "real-world" problems (AECC 1990) and their information requirements as well as the behavioral consequences of their decision making. This is consistent with Patten and Williams' (1990) important suggestion that we move from a curriculum based on teaching accounting standards to one which is based upon an information development and distribution function for economic decision making.

The accounting profession is starting to recognize the growing importance of environmental accounting issues. Associated practices and rules are also changing dramatically. The content of any course addressing environmental accounting will therefore be dynamic and evolving. Hopefully, with an integrative understanding developed through the study of environmental accounting, future accounting students will be better able to adapt to the growing responsibilities they will face as accounting professionals.

### APPENDIX

As interest in environmental accounting has grown, a variety of integrative cases and more-focused problems have been developed for classroom use. Some cases explore actual companies' environmental problems or experiences; others create hypothetical firm settings to provide a sharper focus on key issues. The diversity of issues raised in these materials is indicative of the "richness" of the area. It is not possible to provide a comprehensive list of the vast array of teaching materials that are available or the issues that they raise (in fact, the list seems to be growing on an almost daily basis). The following discussion points are indicative of the type that can arise during environmental accounting case discussions and be used to highlight potential conflicts of interest, adverse incentives, reporting complexities or other provocative and timely accounting issues.

- Traditionally (at least for Superfund), courts have held that environmental liability is strict (negligence is not required), joint and several (a party's portion of the liability is not necessarily related to the party's participation in the damage), and retroactive (satisfying current legal requirements does not guarantee that future changes in the law will not result in liability). Any past or future owner of land should be very concerned about environmental status of the property.
- Most banks now require due diligence audits of commercial real estate properties prior to purchase. In this way, the bank can avoid financing high-risk land deals. It may also be possible for banks to limit their potential legal exposure should an environmental problem arise at the site. There have been many cases where banks have been held liable for cleanup of sites for which they have lent money. For example, in 1980 the Bank of Montana–Butte lent \$275,000 to a company for a property where telephone poles were being creosoted. The company failed in 1984 leaving a contaminated site with projected clean-up costs of \$10 to \$15 million. This potential liability was several times the Bank's total capital.
- Under SFAS No. 5, once a liability is probable and reasonably estimable, the contingent liability (which formerly required only footnote disclosure) has to be booked (DR: Loss; CR: Liability). Note that FIN (Financial Interpretation) No. 14 (of SFAS No. 5) states that, if no amount within a range of estimates is a "better estimate" than any other amount, the firm should disclose the minimum from the range. Also note that, should an estimate turn out to be insufficient to remediate the problem, the incremental liability can be treated as a change in accounting estimate, i.e., handled prospectively and with no explicit disclosure (unless the change is material). "Slow" recognition of increases in the liability could avoid the materiality criterion but may expose the firm to shareholder litigation due to insufficient or misleading disclosure.
- EITF (Emerging Issue Task Force) No. 90-8 (1991) addresses capitalization versus expensing of remediation costs and SFAS No. 5 (1975) addresses disclosure/recognition of a contingent liability. The relation between these two standards is unclear. For example, if a liability is accrued under SFAS No. 5, what are the implications of EITF No. 90-8 as the site is being remediated?
- In addition to potentially large out-of-pocket remediation costs, firms' potential second-order costs associated with restructuring, refinancing current debt or renegotiating terms of existing contracts can be substantial.
- The SEC has relatively more stringent disclosure requirements than the FASB with respect to environmental liabilities (SEC 1989). For example, publicly traded firms may be required to disclose a contingent liability in the Management Discussion and Analysis section of the 10-K before any disclosure appears in the balance sheet or footnotes to the financial statements.
- A legal morass exists in the environmental accounting area. Firms are faced with the particularly uncomfortable trade-off between fair and full disclosure and self-incrimination.

Many accountants feel that Staff Accounting Bulletin (SAB) No. 92 (1993) requires more disclosure than corporations had been making. The trade-off between self-incriminating disclosure and revelation of sufficient proprietary information about its activities to keep the firm (and its auditors) from being sued *ex post* is a contentious issue for many companies.

- There are complex motivational and behavioral issues that arise in structuring the organization and designing management compensation contracts to align incentives across divisions and down the corporate hierarchy in order to achieve corporate environmental goals. Difficulties can arise in designing a compensation agreement where some divisions are cost centers and others are revenue (or profit) centers. The allocation or non-allocation of environmental costs can exacerbate these problems.
- There are both costs and benefits to linking management accounting, financial reporting and environmental information systems. Companies have traditionally used compliance-oriented, stand-alone environmental information systems, but are moving toward integrating these applications with their other information systems.
- The political nature of the accounting process has resulted in inconsistencies between financial accounting treatment and tax rules. In general, conservative financial accounting standards and interpretations require expensing of clean-up costs. However, tax rules typically disallow immediate write-off of such costs. This also raises the topic of financial accounting for deferred income taxes.
- Environmental accounting issues facilitate introduction of current accounting research topics into classroom discussion, such as: contingency qualifications and auditor "opinion shopping"; legal liability and "deep pockets"; earnings management and the "big bath"; and market valuation of liabilities and disclosure policy.

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