

Accounting for Environmental Losses

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SIGNATURE PAGE

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With deepest regard to

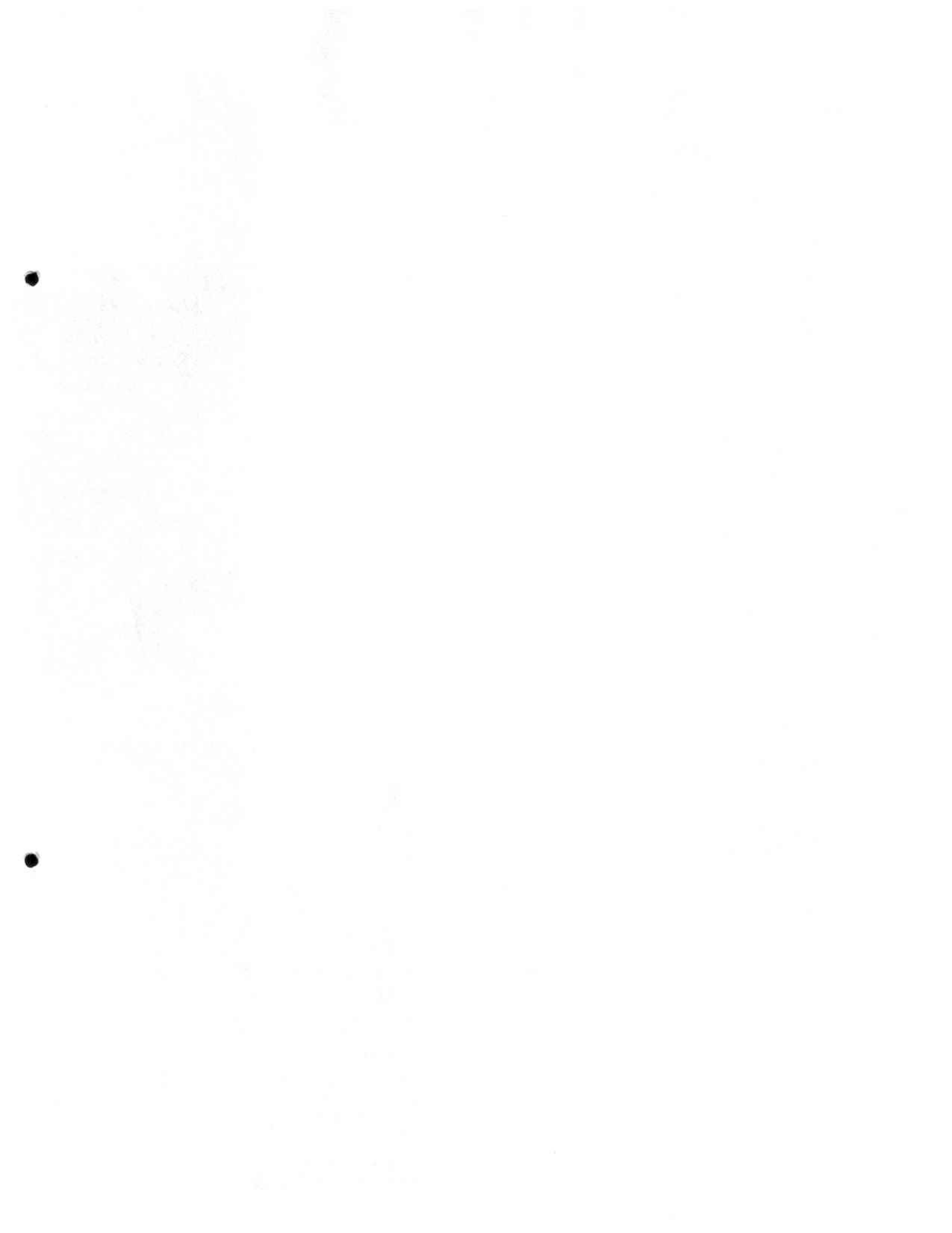
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so I could succeed.



INTRODUCTION

This thesis is presented in what could be described as a quasi-liberal arts format. That is, the analysis of accounting for environmental losses by first gaining an understanding of the environment through the perspectives of economics, the sciences, theology, governmental policy, and finally, accounting. I decided upon this approach because the accounting treatment of environmental losses is a highly specialized area which is reflective of the laws and philosophies of society. That is, there would be no need for any consideration of accounting treatment for environmental losses without a legal and social framework defining the criteria and priorities. Valuing, measuring, and classifying are basic tenets of accounting, so in order to analyze accounting for environmental losses, we must first understand and define how we, as a society and a world community value the environment.

THE THEOLOGICAL PERSPECTIVE

Insight into the environment from the theological perspective is paradoxically the most fundamental and dynamic. The development of humanity's awareness of God through their awareness of the environment is a common theme of the Old Testament. Through daily, routine interaction with their environment, the Jewish people found nurturance from and humility before their God. The environment was their direct living connection with God. When storms raged and plagues spread, they struggled to interpret and make atonement. When harvests were bountiful, they offered prayers of thanksgiving and honored the righteous among them. Knowledge gained through their environment translated directly into knowledge of self, community, and God.

In his book entitled The Spirit of the Earth: A Theology of the Land, John Hart explains the land beliefs of the early Jewish people. "The basic principles underlying all land transactions were that the land ultimately belongs to God ... and that the land was intended by God to serve the needs of the people as a whole, in the present and the future, and so must be used by them in the best possible way." (The Spirit of the Earth, pg. 69).

The success of their crops and subsequent harvests were directly related to their observance of God's law. In Leviticus 26:3-5 (the law of the Jewish people), God promised that "If you live in accordance with my precepts

and are careful to observe my commandments, I will give you rain in due season, so that the land will bear its crops, and the trees their fruit; your threshing will last till vintage time, and your vintage will have food to eat in abundance, so that you may dwell securely in your land (Leviticus 26:3-5)." (The Spirit of the Earth, pg. 70). To the Jewish people, there was a direct relationship between ethical behavior and subsistence.

In addition to their reliance upon the earth for food and shelter, the Jewish people and early Christians listened to the earth for revelations from their God. The attributes of the earth became for humanity vessels carrying powerful spiritual messages to the people. Relevant verses from Romans 1:19,20 say, "Since the creation of the world, invisible realities of God's eternal power and divinity have become visible, recognized through the things he has made." Another verse which expresses this theme is at Wisdom 13:1,5 "for all men were by nature foolish who were in ignorance of God and who from the good things seen did not succeed in knowing him who is and from studying the works did not discern the artisan ... for from the greatness and the beauty of created things their original author by analogy is seen."

The centrality of the environment is apparent in other religions and philosophies as well. Early humanity's intimate connection with the earth helped cultivate the

breadth and depth of theological and philosophical thought. Even before Christianity celebrated the revelation of their "one true God," Greek and Roman theology had deified the attributes of the earth into many gods who possessed control over various powers of nature. Humanity depended upon the gods to manipulate the world around them to provide for and protect them.

However, the monotheism of Christianity and Judaism is significant in their belief in the sacredness of the earth. The earth was a living spiritual compass, and by listening to it they interpreted the signs and found direction for their courses of action. "For those who came to believe in a single Creator, there was no longer any reason to imagine that each object and living thing had a unique spiritual force and that each was imbued with mysterious meaning and motivated by unknown powers. Monotheism was a profoundly empowering idea; just as a navigator can -- through the technique of triangulation -- locate his position anywhere at sea by identifying any other two points with known locations.... [T]hose who came to believe in a single God gained the intellectual power to navigate skillfully through the ocean of superstition and bewilderment that engulfed the ancient world. Whatever these monotheists beheld could be philosophically located with reference to two known points: the Creator, philosophically equidistant from everything He had created, and themselves.... All three elements -- God,

human beings, and nature -- were understood in relation to one another and were essential to this process of triangulation." (Earth in the Balance, pg. 255).

The Native American's intimate connection with the earth provides another example of humanity's spiritual connection with the earth. In an address to a group of Indian tribes in 1884, Chief Seattle of the Suquamish tribe beseeched them to "Teach your children ... that the earth is our mother. Whatever befalls the earth befalls the children of the earth. ... The earth does not belong to us; we belong to the earth. This we know." (Cradled in Human Hands: A Textbook on Environmental Responsibility, pg. 90).

Early humanity understood the value of the earth in relationship to their spirituality and physical survival. They accepted their dependence upon the earth as a necessary and basic aspect of life.

THE IMPACT OF SCIENCE

As scientific technology evolved and offered empirical explanations for natural phenomenon as well as virtually labor-free "solutions" to formerly labor-intensive endeavors, the function of the environment changed from a source of sustenance and revelatory inspiration to a mold for producing desirable objectives which could be attained through manipulation of its elements. As we became more adept at insuring that we could provide for ourselves what nature sometimes failed to provide, our attitude of dependence and inter-relatedness with the earth began to diminish. The belief that the environment could withstand humanity's abuses allowed us to neglect acknowledging, consciously and financially, the losses being sustained.

Production of chemical fertilizers, insecticides, and pesticides is one illustration of how scientific technology offered to society seemingly miraculous benefits with hidden exorbitant environmental price tags. Little consideration was given to the impact these practices would have on the environment because the common perception was that the environment had an unlimited capacity to withstand any consequences that might result.

But as we were soon to discover, science's easy answers produced some significantly detrimental impacts on the environment. "Recent studies have shown that the widespread use of nitrogen fertilizer can stimulate oxygen deprivation

and cause the soil to produce excessive methane and nitrous oxide. ... [C]oncentrations of both methane and nitrous oxide in the atmosphere ... together now account for more than 20 percent of the cause of global warming." (Earth in the Balance, pg. 142). "[T]he real danger from global warming is not that the temperatures will go up a few degrees, it is that the whole global climate system is likely to be thrown out of whack. ... As the climate pattern begins to change, so too do the movements of the wind and rain, the floods and droughts, the grasslands and deserts, the insects and weeds, the feasts and famines, the seasons of peace and war." (Earth in the Balance, pg. 98). Like the threat of nuclear buildup and testing, we are once again faced with the reality that our actions have already drastically, and perhaps irreversibly, altered the world we know. The changes in weather patterns that we have witnessed over the past five years, like snow in Florida and record breaking high temperatures in the North, may well be evidence of just such a change in the global climate.

Environmental changes caused by our discharge of chemicals into the air, water, and ground are alarming, but not nearly as alarming as the harmful affect they have upon our health. Pesticides that increase crop yields and profits, often at the expense of our health, are one example. William J. Rea, director of the Environmental Health Center in Dallas, reports that "[i]ncreasing the

health risk of pesticides to humans is the fact that many of these substances have been shown to be carcinogenic and mutagenic. Out of the 264 million pounds of applied pesticides, for example, 7.8 million pounds were identified as cancer-causing agents in California in 1980. ... Iowa, which uses large amounts of pesticides and herbicides, has cancer rates that are almost the same as the New Jersey chemical dump areas." (Chemical Sensitivity, Vol. 2, pg. 838). Many pesticides, like chlordane residues, remain active for years. It seems logical to conclude that a portion of the skyrocketing health care costs in the United States are another manifestation of the hidden price we are paying for our labor-saving food production. Yet, 1987 sales by DuPont totalling \$510 million did not include an accrual of any liability for cancer treatment or other health related costs. That burden is simply borne by society at large.

In his message on humanity's responsibility for the ecological crisis on December 8, 1989, Pope John Paul II said, "Faced with the widespread destruction of the environment, people everywhere are coming to understand that we cannot continue to use the goods of the earth as we have in the past ... a new ecological awareness is beginning to emerge which rather than being downplayed, ought to be encouraged to develop into concrete programs and initiatives. ... Modern society will find no solution to

the ecological problem unless it takes a serious look at its lifestyle. In many parts of the world, society is given to instant gratification and consumerism while remaining indifferent to the damage which these cause." (Earth in the Balance, pg. 263).

THE ECONOMICS OF POLLUTION

Economic theory has received criticism from environmentally concerned writers. Vice President Al Gore writes in his book entitled Earth in the Balance: Ecology and the Human Spirit "our economics fails to see -- let alone measure -- the full value of major parts of our world. Indeed, what we do see and measure is a very thin band within the full spectrum of the costs and benefits resulting from our economic choices. And in both cases, what is out of sight is out of mind." (pg. 183).

Meaningful measurement and analysis of the "costs and benefits resulting from our economic choices" has not been addressed by contemporary economics. This shortcoming is exacerbated by the observation of Stephan Schmidheiny that the "[r]esources that biologists call renewable are not being given time to renew. The bottom line is that the human species is living more off the planet's capital and less off its interest. This is bad business." (Changing Course: A Global Business Perspective on Development and the Environment, pg. 2). Therefore, renewable resources that would not necessarily factor into such a cost-benefit analysis may need to be considered because they are in fact being depleted and not renewed.

The foundation of our economic system "was established by John Maynard Keynes before the end of the colonial era, during which supplies of natural resources did indeed seem

limitless." (Earth in the Balance, pg. 186). But the fuel and resource shortages of the 1960s and 1970s captured the attention of many people including natural scientists, engineers, and economists. This section provides a brief perusal of the developments in economic theory over the past several decades as a result of the scarcities of the 1960s and 1970s.

Producing the goods and services which are ultimately consumed by society requires application of energy in some form from materials gathered from the earth. The Industrial Revolution shifted the source of this energy from human and animal work to "combustion of fossil fuels -- petroleum, coal, and natural gas." (The Economics of Environmental Quality, pg. 19). Edwin S. Mills explains in his book entitled The Economics of Environmental Quality how economists measure the performance of the economic system by a method called "value judgment" which weighs the consumption and production sides of the economic system. Essentially what this means is that utilitarian principles are used to determine which goods and services make the most people happy. If people are willing to pay for a good or service, that is their vote for desirable goods and, also, for employment priorities as well. Economists admit that their value judgment scale does not weigh all the costs and benefits to society. Mills, a Princeton economics professor, recognizes that pollution is probably "the most

widely discussed external diseconomy.... The terms external economy and diseconomy refer to economic activities that affect people's welfare in ways that are outside or external to the market system." He illustrates this deficiency by using an example of a refinery which produces gasoline and discharges wastes that pollute the air. "The term external diseconomy refers to the cost ... borne by downwind residents that is external to the firm's decision calculus. It is motivated to take account of the social cost of the scarce inputs it employs because it must pay competitive prices for them. But it has no incentive to take account of the costs its waste discharges impose.... Thus the external diseconomy ... causes the refinery to violate the conditions for social efficiency." (The Economics of Environmental Quality, pg. 79). Al Gore also recognized the need to change thinking on externalities when he wrote that "pollution is often the best marker by which to identify and eliminate inefficiency." (Earth in the Balance, pg. xviii).

The following examples from The 1993 Information Please Environmental Almanac, pg. 191, illustrate how several companies have recognized these externalities and were actually more profitable as a result.

Cleaner production. When American Cyanamid modified the manufacturing process of a yellow dye, it was able to eliminate the use of a toxic solvent. Equipment modification that allowed recycling a substitute solvent cost \$100,000 and saved the company \$200,000 a year in reduced disposal and energy costs.

Equipment change. Rhone-Poulenc spent \$10,000 to install in-line condensers for its salicylaldehyde process to avoid product loss during the drying stage. Product yield rose 0.5 percent. The plant saved \$30,000 in the first year.

* * *

Companywide involvement. The 3M Company, which has pioneered corporation pollution prevention, introduced its Pollution Prevention Pays (3P) program in 1975. 3M reports that in more than 3,000 3P projects, it has cut wastewater by 1 billion gallons, air pollutants by 120,000 tons, and solid waste by more than 400,000 tons. Savings so far exceed \$530 million.

Fertilizer is one example of a benefit that drastically increases agricultural production yields and, therefore, is touted as a social good. As described above, use of nitrogen fertilizer increases methane and nitrous oxide levels in the atmosphere. Presumably, with the votes represented by fertilizer sales dollars, global warming is presently an allowable "externalized" cost. We have vetoed paying for the cost to arrest global warming in favor of the "high yield" benefits from using fertilizers. Such allowable costs are often justified by our Keynesian economic system which ultimately measures social good in terms of Gross National Product, without consideration of depreciation of natural resources in the process. This is another manifestation of the belief that the earth has unlimited capacity to endure and that society's costs are equitably adjusted in the market place.

GOVERNMENTAL POLICY, THE LAW, AND THE ENVIRONMENT

Federal Legislation

The American people have always been interested in the quality of the environment, and that interest has led to environmental legislation ranging in scope from the Public Health Act of 1912 to the Federal Insecticide, Fungicide, and Rodenticide Act of 1947, and to the Clean Air Act signed by President Bush in 1990. However, the volume of environment-related legislation passed and judicial decisions rendered within the past two decades surpasses the volume of any other two decade period in our history. From 1962 to the present, Americans have witnessed passage of environment-related legislation or judicial decisions interpreting such legislation in nearly every year. "Over the past four decades, the focus has been more on achieving public health benefits of clean water and clean air. Most recently, the government has responded to a growing awareness that human activities can produce irreversible environmental damage, and has taken steps to combat the causes of such damage." (Environmental Outlook 1980, pg. 23).

The stated purposes of The National Environmental Policy Act (NEPA), which was enacted in 1969, were

To declare a national policy which will encourage productive and enjoyable harmony between man and his environment; to promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man; to enrich the understanding of the ecological

systems and natural resources important to the Nation; and to establish a Council on Environmental Quality. (NEPA in the Courts, pg. 293).

Title II of NEPA directs the Council on Environmental Quality, which was created under Title I, to, among other things, "develop and recommend to the President national policies to foster and promote the improvement of environmental quality to meet the conservation, social, economic, health, and other requirements and goals of the Nation." (NEPA in the Courts, pg. 296).

NEPA established the framework and national priorities for subsequent environmental legislation. In the 1970s, the Clean Air, Clean Water, Resource Conservation and Recovery, Toxic Substances Control, and Federal Pesticide Acts were enacted. The goals and objectives of these acts were generally to protect human health through regulation of toxic substances, restoration of contaminated sites, and protection from further degradation. Each act targeted certain pollutants and set standards of quality to meet their stated objectives.

However, the "Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA), as amended by the Superfund Amendments and Reauthorization Act (SARA), is the environmental law that most often imposes potential liability on parties engaged in real estate and corporate transactions. (*The Journal of Accountancy*, December 1992,

pg. 67). Therefore, as illustrated later, it is these two pieces of legislation that cause the most concern among business professionals because of the potential liability they impose.

State Legislation

In 1972, Montanans adopted a new Constitution which grants an inalienable right "to a clean and healthful environment," and imparts an obligation requiring that "the state and each person shall maintain and improve a clean and healthful environment in Montana for present and future generations." (Mont. Const. Art. II, Sec. 3 and Mont. Const. Art. IX, Sec. 1). The Constitution also created a duty to restore land from which natural resources are removed and required the legislature to establish the resource indemnity trust for the State of Montana with a nonexpendable corpus of \$100,000,000 to be funded by taxes on natural resource extraction (Mont. Const. Art. IX, Sec. 2).

The Montana Constitution plays a vital role as protector of the environment from further degradation, and may cause the demise of some businesses in the process. Interpreting the state constitution in a suit filed against Golden Sunlight Mine, which was anticipating tripling its size, "Helena District Judge Thomas Honzel declared unconstitutional a state law that has allowed open pits at hardrock mines to go unreclaimed. 'A reclamation plan is

constitutionally required for open pit mines,' said Honzel.... He ruled: 'The court finds that the reclamation plan, insofar as it neither provides a reliable evaluation of the potential for groundwater contamination nor guards against such contamination, violates Section 82-4-336(5), MCA.'" (*Down to Earth*, pg 1). Lawyers from the Department of State Lands, who had granted permission on Golden's plans, "told the Helena paper: 'All of a sudden you have a brand new, fundamental change in interpreting mining reclamation. That constitutional provision may raise operating costs enough that some mines will immediately become uneconomical.'" (*Down to Earth*, pg. 1).

Montana's environmental agencies also work closely with the federal environmental agencies but, so far, there are no federal implementation plans applicable to Montana. However, lead levels and sulphur dioxide emissions in East Helena are among the health concerns targeted by a state implementation plan (SIP).

American Smelting and Refining Company has, over the past couple years, undertaken the remedial task of replacing the topsoil on yards within a mile radius of the lead smelter location in East Helena, Montana. Priority was given to those households with children because they bear the highest risk of lead poisoning. Tolerances of lead in small children are significantly less than adults, and

children more frequently come into contact with the contaminated soil while playing.

"Regulation of discharges to air and water is the heart of our national environmental program." (The Economics of Environment Quality, pg. 205). Because of the complexity of environmental issues, regulation is susceptible to error and subjectivity. To be effective, business and regulatory agencies need to share the common objective of reducing pollution. Development of more efficient systems needs to be encouraged while balancing the overall benefit to society with business's motivation to make profits for shareholders.

PHILOSOPHICAL BASIS OF THESIS

Based upon the facts and perspectives presented above, the underlying philosophy of this paper recognizes that the ecology of the earth must be considered as a whole, including its necessary balance and interrelatedness with humanity. The premise that the health of humanity is dependent upon the health of the earth (and vice-versa) is an implicit assumption. I support those who challenge the belief that the environment's value is justifiably measured by the profit produced from piecemeal abstraction of its resources without regard to the resultant damages to the environment and its people. Too often stewardship obligations have been ignored and profits have been funneled into the pockets of shareholders who were indifferent to the loss incurred by those who were left to live in the wastelands that remained, enriched only temporarily by the wages paid for their assistance in the abstraction.

However, traditional thinking on the earth's limitless ability to accommodate humanity's insatiable market-driven appetites has finally begun to change. And the bill for the past excess has been estimated within a range from \$150 to \$750 billion: at best a modest beginning in addressing the problem. (*The Journal of Accountancy*, December 1993, pg. 44 and March 1992, pg. 45). An analysis of the accounting issues involved in the cleanup is presented in the next section.

ACCOUNTING TREATMENT OF ENVIRONMENTAL LOSSES

A primary function of the accounting profession is protection of the financial well-being of society and its allocation of resources to satisfy demand by lending objectivity and credibility to the financial statements of companies providing goods and services. This principle is embodied in Article II of the *American Institute of Certified Public Accountants Code of Professional Conduct* which requires members to "accept the obligation to act in a way that will serve the public interest, honor the public trust, and demonstrate commitment to professionalism.... The public interest is defined as the collective well-being of the community of people and institutions the profession serves." Therefore, it naturally follows for the accountant to be cognizant of protecting society's environmental health as well: a task necessitated and justified by tough U.S. environmental laws enacted during the past several decades.

It is the objective of this thesis to outline the accountant's role in accounting for environmental losses by analyzing and applying the official pronouncements of the Financial Accounting Standards Board. The term 'accountant' when used herein encompasses all professionals bound by those standards.

Accounting for environmental losses poses interesting challenges to the accounting profession in providing accounting and auditing services. Complex issues surround

the timing of environmental loss accrual and accountants are invaluable in helping businesses determine when it is appropriate to accrue the liability. In addition, the accountant can assist when remediation plans have been completed and businesses are interested in gaining favorable tax treatment subsequent to their compliance with environmental standards.

Results of a 1990 survey involving 125 major U.S. corporations were published in an article entitled Accounting for Environmental Costs: A Hazardous Subject in the March 1992 issue of *The Journal of Accountancy*. The results provide a framework for analyzing environmental accounting in the United States. The survey reported that corporations that accept their environmental responsibilities "are viewed more favorably by shareholders." (*The Journal of Accountancy*, March 1992, pg. 51). This conclusion is substantiated by "a 1992 report prepared by the international 50-member Business Council for Sustainable Development, [which] notes [that] businesses that recognize the advantages of corporate environmentalism 'may expect to reap advantages over their competitors who lack vision. Companies that fail to change can expect to become obsolete.'" (The 1993 Information Please Environmental Almanac, pg. 184).

Shareholder reaction is reflective of the rest of the population with regard to issues affecting the health of the

environment. Businesses that underestimate the impact of investor sentiment may find themselves unable to compete for funds available to companies with the vision and wherewithal to address their environmental stewardship responsibilities. However, the fact that only 14% of the corporations surveyed had chartered board-level committees responsible for environmental decisions and only 11% had accounting policies addressing environmental accounting demonstrates the need for consciousness raising and clearer accounting treatment in this area. Of the 11% with accounting policies in place, less than one third disclosed the policies in financial statement footnotes.

FASB's Statement on Accounting Standards No. 5, Accounting for Contingencies, defines a loss contingency as "an existing condition, situation, or set of circumstances involving uncertainty as to possible ... loss ... to an enterprise that will ultimately be resolved when one or more future events occur or fail to occur." Environmental exposure is disclosed in the financial statements by 1) disclosure in a footnote "if there is at least a reasonable possibility a financial loss has been incurred," or 2) accrual in the balance sheet of "a charge to income and appropriate disclosure is provided." For those companies specifically targeted by the remediation requirements of the CERCLA, the minimum accounting treatment which must be considered is disclosure in a footnote because a reasonable

possibility of financial loss probably has occurred. In addition, to prevent the financial statements from being misleading, it may be necessary to disclose "in the notes to the financial statements if a company is required to commit funds for significant capital expenditures in response to an environmental law change." (*The Journal of Accountancy*, March 1992, pg. 46). The footnote "should describe the environmental exposure, including an estimate, or range of estimate, of the loss (or if there is no reasonable estimate, it should so state)." (*The Journal of Accountancy*, March 1992, pg. 45).

When determining whether an accrual of a liability for environmental loss is appropriate (and therefore must be disclosed in the balance sheet), SAS No. 5 requires that an estimated loss from loss contingencies be accrued by a charge to expense and the recording of a liability if information available prior to issuance of the financial statements indicates that it is **probable** that a liability had been incurred at the date of the statements **and** if the amount of loss can be **reasonably estimated**.

For those corporations in the 1990 survey with accounting policies in place, "measurability ... rather than probability" was the determining factor in recording the environmental liability. (*The Journal of Accountancy*, March 1992, pg. 52). The difficulty in measuring the liability stems in part from the joint and several liability

provisions of CERCLA (described above) and rapidly changing remediation techniques.

Measuring the liability is complicated by the broadly defined group of CERCLA's "potentially responsible parties" (PRPs). PRPs include 1) the current owner or operator; 2) anyone who at the time of disposal of hazardous substances owned or operated the facility; 3) generators of hazardous substances disposed of at the facility; and 4) anyone who transported hazardous substances to the facility. (*The Journal of Accountancy*, March 1992, pg. 44). The EPA later minimally limited CERCLA's PRPs by granting a "security interest exemption for lending institutions" in response to assertions by regulators and third parties regarding the liability of banks and lenders as owners. (*The Journal of Accountancy*, March 1992, pg. 44).

The number of potentially liable third parties defined by CERCLA suggests the possibility of recording the liability net of recovery from third parties. According to *The Journal of Accountancy*, March 1992, pg. 55, "[r]ecording an environmental liability net of expected recoveries is often accepted in practice."

Further clarification of this practice is found by consensus of FASB's Emerging Issues Task Force (EITF) in *EITF Issue No. 93-5, Accounting for Environmental Liabilities*, which provides "that an environmental liability should be evaluated independently of any potential claim for

recovery ... and that the reported loss should be reduced only when a recovery claim is probable of realization." (*The Journal of Accountancy*, September 1993, pg. 97). The position of recording a receivable when it is probable of realization is consistent with generally accepted accounting principles. However, in contrast, the Securities and Exchange Commission in Staff Accounting Bulletin (SAB) No. 92, issued June 8, 1993, "says such netting will not be appropriate after *FASB Interpretation No. 39, Offsetting of Amounts Relating to Certain Contracts*, becomes effective for periods after December 15, 1993." (*The Journal of Accountancy*, September 1993, pg. 97). SAB No. 92 must be followed by SEC registrants; therefore, public companies must accrue the total estimated amount of the environmental liability.

The EITF also reached consensus in *EITF Issue No. 93-5* in permitting, under certain conditions, discounting to present value environmental liabilities. "[D]iscounting environmental liabilities for a specific cleanup site to reflect the time value of money is allowed but not required only if the aggregate amount of the obligation and the amount and timing of the cash payments for that site are fixed or reliably determinable.... If an environmental liability is discounted under this consensus, any recoveries recognized as assets also must be discounted." (*The Journal of Accountancy*, September 1993, pg. 98).

In addition to accounting for and remediating environmental losses which have already occurred, consideration must be given to production processes which generate hazardous wastes. In these cases, "[a] reserve should be accrued as units are produced to reflect, in current earnings, expected cleanup costs." (*The Journal of Accountancy*, March 1992, pg. 45). (An example of the practicality of this idea recently surfaced in Pony, Montana, where a creek contaminated by strychnine from an inoperative Chicago Mining site illustrates the benefits of requiring such companies to furnish reclamation bonds before beginning site preparation and production. This is a safety net the town of Pony may wish it had known about much earlier.)

In addition to estimating liabilities, another accounting matter involves revaluation of assets by 1) reestimating the useful life of productive assets whose life "may be shortened by environmental regulations requiring replacement by more environmentally friendly equipment by a specified date" or 2) reducing the carrying value of property "to reflect environmental cleanup costs required before transfer but not recoverable from the buyer." (*The Journal of Accountancy*, March 1992, pg. 45).

Revaluation of assets has a direct effect upon net income; however, the effects are more significant when the values of assets are reduced. Reducing the useful life

would result in lower net income over the period of the shortened life of the assets. That is, the increased depreciation expense would reduce income over the useful life of the assets, resulting in a net income which is lower than was originally attainable under a longer depreciation period. However, reducing the value of the asset by the amount of the estimated cleanup costs would have a significant immediate effect upon net income because the estimated amount of cleanup costs would be expensed when the asset was revalued.

In some cases, it may be appropriate to capitalize rather than to expense environment-related expenses. The FASB's EITF reached consensus in *EITF Issue No. 90-9, Capitalization of Costs to Treat Environmental Contamination*, in allowing the expensing of environment-related costs incurred "to remove, contain, neutralize, or prevent existing or future environmental contamination." Most of the firms responding to the 1990 survey described above considered "legal fees, consulting fees and other soft costs to be environmental costs." (*The Journal of Accountancy*, March 1992, pg. 52). Proper capitalization of environment-related costs under *EITF Issue No. 90-9* may occur "only if [such costs are] recoverable because they 1) extend the life capacity, safety or efficiency of company-owned property; 2) mitigate or prevent environmental contamination likely to result from future operations; or 3)

prepare for sale property currently held for sale." (*The Journal of Accountancy*, March 1992, pg. 46).

Treasury Regulation Section 1.1624 appears to favor capitalization of environment-related costs. The Treasury Regulation allows expense treatment of environment-related expenses only if such expense 1) "is incidental;" 2) "does not materially add to the property's value;" 3) "does not appreciably prolong the property's useful life;" and 4) was incurred "to keep the property in an ordinarily efficient operating condition." (*The Journal of Accountancy*, December 1993, pp. 44-45). The Treasury Regulation may contradict the position of the *EITF Issue No. 90-9* insofar as the EITF consensus allowed expensing costs "to remove, contain, neutralize, or prevent existing or future" degradation. Under the Treasury Regulation, these costs would not be allowable expenses if they were incurred to "keep the property in an ordinarily efficient operating condition."

Further clarification of the Internal Revenue Service's position on the capitalization versus expense issue is offered in Technical Assistance Memorandum (TAM) 9315004 (April, 1993). Although TAMs are issued in response to specific taxpayer issues, they do provide some basis for universal application. Generally, TAM 9315004 allows deduction of expenses incurred for legal fees "to defend ... including litigation with its insurer to establish contractual rights" and assessment costs "when the property

is found not to require remediation." (*The Journal of Accountancy*, December 1993, pg. 46). The TAM's findings are less generous than *EITF Issue No. 90-9* and Treasury Regulation Section 1.1624. The TAM requires capitalization of assessment costs incurred for property found to require remediation, remediation expenditures incurred, oversight expenses incurred to monitor the cleanup, and other costs borne out of the remediation itself. Unfortunately, this treatment of remediation costs has the undesirable effect of discouraging companies from "undertak[ing] cleanup activities voluntarily." (*The Journal of Accountancy*, December 1993, pg. 44). Reasons for not undertaking the cleanup could be that 1) they receive no tax benefit for doing so, or 2) capitalization of remediation costs increases the book value of the property, and therefore, reduces possible gains (or increases losses) when the property is eventually sold.

Accountants who are familiar with the requirements of CERCLA's "innocent purchaser" defense may help businesses avoid assuming an environmental liability through the purchase of contaminated property. In order to protect their clients from exposure to environmental liability when negotiating a purchase of property, one prerequisite is to conduct "appropriate inquiry" into the past ownership of the property. A previous owner known to have engaged in an industry that used or produced hazardous wastes may subject

the new owners to remediation liability merely by their innocent purchase of the property. In some states, sellers risk voiding their anticipated property sale if they don't "provide either a negative declaration there are no hazardous substances or wastes on site or a cleanup plan to address any site contamination." (*The Journal of Accountancy*, March 1992, pg. 44). Under SARA, the following factors are considered in determining adequacy of inquiry 1) the purchaser's specialized knowledge or experience; 2) ability to detect contamination through inspection; 3) the site's obvious condition or physical appearance (i.e., odors, soil discoloration); 4) commonly known or reasonably ascertainable information about the property (i.e., site used as dump, gas station); and 5) the relationship of the purchase price to the market price of uncontaminated equivalent property. (*The Journal of Accountancy*, December 1992, pg. 68).

Like CERCLA, the Clean Air Act, which was signed into law by President Bush in 1990, poses equally challenging accounting issues as businesses comply with its mandates. The most significant matter results from the legislation's creation of air pollution emission rights, complete with a market for these rights. The popularity of this idea has even spread to the United Nations. The intent of the law is to reduce sulfur dioxide emissions from utilities generating electricity to about two-thirds of their 1985-87 level.

An article entitled Accounting for Tomorrow's Pollution Control in the July 1992 issue of *The Journal of Accountancy* illustrates and analyzes the accounting concerns in valuing and classifying CERCLA's air pollution emission rights. Emission rights are distributed in units called allowances. One allowance represents the right "to emit one ton of sulfur dioxide in any given year." (*The Journal of Accountancy*, July 1992, pg. 70). The allowances may be carried forward but utilities are precluded from using in the current year allowances granted for future years. 2.8% of the allowances will be used by the EPA to establish an allowance bank. The first EPA auction is to be held in 1995.

The FASB has not yet promulgated a formal accounting pronouncement addressing the accounting treatment of these allowances. However, allowances seem to clearly fit the FASB's definition of assets which are defined under FASB Concepts Statement No. 6 as "probable future economic benefits obtained or controlled by a particular entity as a result of past transactions or events." Allowances may be obtained by EPA grants, purchases from other companies or the EPA, and through bonus allowances granted by the EPA for qualified emission reduction. Therefore, the allowances "seem to meet all the criteria for an asset and should be recognized as such." (*The Journal of Accountancy*, July 1992, pg. 71). Those allowances expiring within the longest

of the current year or the operating cycle should be classified as current assets, and those expiring outside that period as long-term assets.

A determination whether to value the allowances at cost or market must also be made. Generally accepted accounting principles require recording assets at cost, with the exception of non-fixed assets such as receivables, inventory, and marketable securities.

If historical cost is the valuation principle, allowances which were granted to companies by the EPA without charge would have a cost basis of zero. This complicates the subsequent sale of those allowances. When a company wants to sell allowances with a zero cost basis after installation of pollution control devices, "the reasonable solution is to allocate such costs to the allowances freed up for trade." (*The Journal of Accountancy*, July 1992, pg. 71). The costs of such installation logically could be allocated to the allowances being sold because the company installed the pollution control devices so it wouldn't have to use the allowance(s). The cost the company incurred to forego its right to use the allowance represents the cost of the allowance, especially if it acquired and carried the allowance at a zero cost basis. Therefore, it makes sense to allocate the cost of the improvement to the allowance to avoid recognizing an unrealistic gain which does not reflect the substance of the

transaction. However, it is possible this cost may exceed the current market price of the allowance(s), and therefore, the incentive for installing more environmentally friendly equipment may be low. In addition, as more and more companies install environmentally friendly equipment, demand for allowances will decrease and companies might opt to use the allowances instead of installing the equipment.

No hard and fast rules exist for determining proper classification of allowances. In fact, arguments can be made for classifying them as inventory, marketable securities, or intangible assets. Inventory is defined in Accounting Research Bulletin No. 43, Restatement and Revision of Accounting Research Bulletins, as "items of tangible personal property which ... are held for sale in the ordinary course of business ... or ... are to be currently consumed in the production of goods or services to be available for sale." Allowances could be classified as inventory because "they are just as tangible as a certificates of deposit (CDs) and marketable securities," and "may be held for sale" or "consumed in the production of goods or services to be made available for sale." (*The Journal of Accountancy*, July 1992, pg. 72). Alternatively, allowances may fit the classification as a marketable security because they confer a "marketable right to a certain form of consumption." (*The Journal of Accountancy*, July 1992, pg. 72). Finally, allowances are "unrelated to

physical form" and "enable companies to continue operations at a given level of emissions" much like "a franchise or license" so classification of allowances as intangible assets is also a possibility. (*The Journal of Accountancy*, July 1992, pg. 72).

If allowances are classified as inventory, they would flow through to the income stream as they were consumed in the generation of electricity, similar to raw materials used in the production of goods. In the event that demand for the allowances was high and the company installed equipment that eliminated the need for the allowances, the "inventory" could be sold to other companies. Conversely, if demand for the allowances was low or nonexistent, the "inventory" could be written off due to obsolescence.

Amortization over a period not to exceed 40 years would be appropriate for allowances classified as intangible assets. The amortization period would depend upon the annual limits of sulfur dioxide emissions set by the EPA and the projected life of the allowances based upon those limits. Because allowances may not be depleted evenly over the period, justification exists for amortizing the allowances based upon a units of production scenario. However, classifying the allowances as intangible assets may not be feasible because intangibles are recorded at cost and, as discussed earlier, allowances likely could be acquired through EPA grants at no cost.

Classification of the allowances as a special class of marketable securities eliminates the problem of accounting for allowances acquired at no cost, since pursuant to generally accepted accounting principles their value would be adjusted to the market rate of the current period. However, allowances differ from marketable securities in that they are "used up" in the generation of electricity, and those allowances used in the current period would be expensed. Therefore, they would need to be defined as a special class of marketable securities.

Guidance for applying accounting principles to the problem presented by allowances is found in FASB Concepts Statement No. 2, Qualitative Characteristics of Accounting Information, which states "The overriding criterion by which all accounting choices must be judged [is that] ... the better choice is the one that ... produces from among the available alternatives information that is most useful for decision making." Based on this, the authors of the article referred to above "concluded reporting allowances at current market value best meets this criterion. ... However, [they] also believe current market value is not satisfactory for external financial reporting." (*The Journal of Accountancy*, July 1992, pg. 73). As for classification, they recommend "special treatment" resembling "closely the treatment of marketable securities." (*The Journal of Accountancy*, July 1992, pg. 74).

It should be noted that the recommendations of the authors in the above described article do not carry the authority of FASB pronouncements. However, businesses and their accountants often must wrestle with accounting issues similar to those discussed above in the absence of official pronouncements of the FASB. When accountants find themselves in such a position, industry practice and technical analyses published in professional journals may provide support for the accounting methods being contemplated, as long as official FASB pronouncements are applied where appropriate.

THE AUDITOR'S ROLE

The auditor is provided a unique opportunity to curb additional environmental losses, and possible subsequent financial losses, by a basic working knowledge of environmental laws. Internal and external auditors need to be keen to detect "numerous 'transactional structures' and legal provisions to limit or apportion potential environmental liabilities." (*The Journal of Accountancy*, December 1992, pg. 69). Internal and external auditors who are aware of the "red flags" and preventative measures described hereinafter and in Appendix A may be in a position to protect the company from entering into transactions containing high inherent environmental risks.

One popular method to prevent companies from assuming environmental liabilities that is often recommended by environmental attorneys is an environmental audit. The audit "involves investigating a particular parcel of real property to determine the likely presence of hazardous substances that have been released or may have been released." (*The Journal of Accountancy*, December 1992, pg. 69). The audit is usually conducted in two phases, the first involving review of recorded title documents, governmental cleanup liens, aerial photos, and visual inspection of the site. Phase two is entered when phase one indicates possible contamination. Discerning auditors will scan corporate minutes and legal documents for evidence that

a company participated in an environmental audit. Other transactions auditors must examine carefully include 1) the purchase or sale of property at a bargain price which may indicate an "implicit assumption of environmental liability;" 2) contract provisions requiring the seller to set aside funds for potential cleanup (such as "letters of credit, holdbacks, guarantees, surety bonds or escrowed funds") or allocation of potential environmental liabilities; and 3) requirements by lenders of environmental impairment insurance to provide third-party liability coverage. "[T]hese efforts may shift environmental liabilities among the parties to a real estate or corporation transaction." (*The Journal of Accountancy*, December 1992, pg. 69). Appendix A of this thesis, entitled "Examples of potential environmental liability red flags," from *The Journal of Accountancy*, December 1992 issue, lists the sources of information that auditors should peruse for indications of possible red flag situations that may have occurred. Red flag situations are those that may alert the auditor to environmental activity which carries an inherent audit risk. Examination of the listed sources of information may provide the sufficient competent evidential matter required by generally accepted accounting standards, thus reducing the auditor's detection risk in rendering his or her opinion.

Under SAS No. 54, Illegal Acts by Clients, auditors must consider laws which have a "direct and material effect on the determination of financial statement amounts." SAS No. 54 "says environmental laws relate more to an entity's operations than to its financial and accounting aspects and their financial statement effect is indirect." (*The Journal of Accountancy*, December 1992, pg. 70). However, even though the auditor "does not bear the same level of responsibility for environmental laws" as "tax laws and regulations governing revenue recognition by government contractors," SAS No. 54 "specifies inquiries should be made of management about the auditee's compliance with applicable laws and regulations." (*The Journal of Accountancy*, December 1992, pg. 70). The items listed in Appendix A serve as indicators of possible legal violations which the auditor should investigate.

Any time the auditor "concludes an illegal act has occurred, its impact on the financial statements must be assessed; the auditor's finding must be communicated to the board of directors audit committee or its equivalent." (*The Journal of Accountancy*, December 1992, pp. 70-72). Some recommendations for the "prudent auditor" are to 1) "request that the client's legal counsel address these matters in its attorney letter;" 2) "document his or her compliance with SAS No. 54;" 3) "document his or her assessment of the adequacy of the client's treatment and disclosure of

contingencies according to FASB SAS No. 5." (*The Journal of Accountancy*, December 1992, pg. 72). Although none of these recommendations are required by the FASB, documentation of the auditor's work, if done correctly, provides an invaluable defense in litigation.

CONCLUSION

The advent of scientific technology essentially sold us a bill of goods: the hope of free lunches. Our health is paying a high price for pollution caused by the use of agricultural chemicals and the burning of fossil fuels. This is not to say that the advances of science are all detrimental. But, it is to say that they are not without consequence. We have allowed science to induced us into complacency about our spirituality. The values of reverence and conservation which we have discarded in favor of a promise of abundance are once again being recognized. Ironically, the changes needed to reverse the current trend of consumerism are hampered by our faith in science. We must not be fooled into waiting for the objective proof promised by science in endeavors to heal the environment. We must hone our ability to hear through our spiritual connection with the earth. It will literally be the guiding force in delivering us from the evil of environmental ruin.

The environmental slogan "Reduce, Reuse, Recycle" embodies more than advice about curbing our consumerism. It is an ethical and spiritual admonition as well: a reminder of our stewardship obligation for the gifts we hold in trust and a call to refocus our attention on how our behavior, our need for excess, is hurting others. It is a petition to look beyond the financial bottom lines to the qualitative

measures of efficiency. And one of the basic priorities must be the quality of our natural and social environment.

Our economic theory should address all factors in the operating environments of business and the world at large. Factors that previously have been treated as externalities must show up in the economic curves. It is not allowable to classify as externalities those costs borne by society. Without consideration of the externalities, we are making consumption decisions based on only part of the information.

The environmental legislation passed during the last several decades has placed an unquestionable burden upon industry and has presented interesting accounting challenges, too. Nonetheless, the legislation was overdue and the benefits to our future generations, and indeed the health of people everywhere, far outnumber current remediation costs. In order to intelligently place our economic votes as consumers, the full cost to society must be disclosed in the price tag: Call it Truth in Purchasing.

Hopefully, the struggle involved in cleaning up and preventing further degradation will instill a deeper appreciation of our unseen balance with the earth. The hard lesson is that environmental stewardship falls equally upon the shoulders of business and individuals. Our success in addressing the problem depends upon acceptance of our respective portions of responsibility. The destruction of our environment must not continue to be an acceptable,

unrecognized loss in meeting our consumption demands. The sacrifice of individuals is to seriously consider the impact our purchases have on the balance of the earth. Every dollar we spend represents our overall economic vote. We must not use them foolishly. And in providing those goods, one obligation of business is to invest in the most environmentally efficient capital on its own, without the need of costly regulation. Durable goods, which are truly durable, would reduce the amounts of junk goods needing recycling efforts. Quality control in business is an essential element. The less society has to throw away, the less environmental burden we create.

As for the accounting profession, the accounting methodology will continue to evolve as the accounting profession assimilates changes resulting from environmental (and other) changes. Its ability to responsibly address these changes is directly related to the structure and regulation of the profession. The creation of the Emerging Issues Task Force is one example of the exemplary management of the task of standard setting in an ever changing accounting environment.

On an individual level, diligence in protecting the interests of society when providing audit services must be given highest priority. Much of the success of environmental legislation depends upon true accountability of industry when providing services which pose a significant

risk to the environment. These costs must be accurately factored into earnings in order for society to understand, and business to bear the burden of the true cost of a process or product. This in turn will empower each one of us to make sound economic, environmental, and social choices.

RECOMMENDATIONS

1. Auditors who conduct examinations of financial statements in industries with high environmental risks should develop audit programs to specifically address the special circumstances inherent therein. Appendix A of this thesis, from the December 1992 *The Journal of Accountancy*, contains items that provide a good basis for an environmental checklist.

2. Accountants who provide services for utilities should maintain familiarity with the specific environmental accounting issues currently being addressed by the Emerging Issues Task Force (*EITF Issue Nos. 93-5 and 90-9*), and any issued subsequent thereto. Classifying, as a special class of marketable securities, the allowances for sulfur dioxide emissions has, in my opinion, the most support, and is, therefore, recommended.

3. Governing boards of corporations should appoint a committee responsible for environmental issues. The environmental committee would establish goals and standards relating to aspects of the company's business that affect the environment. The internal auditors could be required to prepare compliance and efficiency reports on the company's performance in light of the standards. The committee could also be responsible for overseeing research and development insofar as it related to finding environmentally superior alternatives to producing the company's goods and services.

4. Implement *Steps for Company Managers* from Frances Cairncross's Costing the Earth: The Challenge for Governments, the Opportunities for Business as reprinted in Appendix B to this thesis.

■ ENVIRONMENTAL VIOLATIONS

Examples of potential environmental liability red flags

Sources of information

Red flag

Client inquiry/analytical review

Auditor experience and familiarity with the industry, the lending environment (prime rate, etc.) and the real estate market.

Cash.

Prepaid assets (insurance, etc.)

Liabilities.

Notes receivable/payable.

Significant changes in other assets and liabilities.

Insurance expense.

Attorney—professional fees.

Loan losses.

- ▶ Client participated in real estate or corporate merger—consolidation transactions during the period in question.
- ▶ Client engaged in borrowing or lending activities with a higher-than-expected interest rate (possible “premium” charged to cover environmental risk).
- ▶ Client purchased land at a price significantly below local market (possible “bargain” sale due to environmental risk).
- ▶ A deal fell through that would have involved the client as a seller of real property.
- ▶ Client made a piecemeal sale of assets (retaining real property).
- ▶ An environmental audit was authorized or performed.
- ▶ A risk assessment or estimate of cleanup costs was made.
- ▶ Client was involved (as borrower—lender) in a transaction where the lender decided not to foreclose despite a default situation.

Review of corporate minutes

Executive sessions.

Board of directors.

Shareholder meetings.

Review of legal documents

Earnest money contracts.

Loan agreements.

Contracts for sale or purchase of land.

Merger—acquisition documents.

Trust agreements.

Lease agreements.

- ▶ Client agreed to provide an indemnity to another party or agreed to contractual allocation of potential liabilities.
- ▶ Client agreed to obtain additional insurance coverage against environmental risks or liability to third parties.
- ▶ Client became a fiduciary of a trust that includes land or stock of a closely held company among its assets.
- ▶ Client agreed to perform periodic environmental audits or to restrict use of certain property.

Test of transactions

Acquisition cycle

Payment cycle

- ▶ Client purchased real property.
- ▶ Client paid additional legal—professional fees relating to “deal” that fell through or to performance of environmental audit.

Audit of cash accounts

- ▶ Client set up new escrow accounts, letters of credit or set-asides.

Audit of notes receivable and payable

- ▶ Past due note: lending client has not foreclosed on property securing past-due note receivable or borrower client still has possession of real property securing a defaulted note payable.

Review of adequacy of insurance

- ▶ Client obtained additional insurance coverage against environmental risks or liability to third parties.

Checklist for Company Managers

How should the sensible company chairman turn environmental ideas into action? Here are a few suggestions to begin with:

1. Put the most senior person possible in charge of environmental policy. A member of the board should have clear responsibility, and there should be a well-defined management structure. All the golden intentions in the world are pointless unless the chairman cares and is known to care.
2. Draft a policy, then make it public. Make it clear. Include targets, with numbers and dates; this will not be possible unless you also follow the remaining suggestions.
3. Measure. Nothing concentrates the mind like numbers. In particular, discover what wastes you are creating and what energy you are using.
4. Institute a regular environmental audit to check on what is happening. While an outside consultant may be a help with the first three steps, this one can be done in-house. Pay particular attention to the follow-up: there is no point in knowing what is wrong if nothing is done to fix it.
5. Consider ways to reduce the range of materials you use that could do environmental harm. Do you really need so many toxic chemicals?
6. Think about the materials in your product. If you had responsibility for disposing of it when your customer threw it out (and one day, legislators may well dump that burden on your firm), could you do so? In an environmentally benign way? If not, consider changing the design and materials you use.
7. Remember that you may be able to make a business opportunity out of disposing of your product when the customer has finished with it. If your customer brings back used paint drums or old refrigerators, it offers a chance to build a new link -- and to make your customer dependent on you in a new way.
8. If you invest in a country where environmental standards are low, do not expect them to stay that way. If one country finds a way of forcing companies to clean up, others will follow. Better to assume that standards everywhere will rise than to risk an expensive and disagreeable surprise.
9. Accept that environmental regulations will tend to converge upward. What is compulsory in the most energetically environmental markets (California, Germany, Scandinavia) will probably reach your home market. If you accept the highest standards before they are made compulsory, you steal a market advantage.
10. Remember that greenery is often a proxy for quality -- in the eyes of your customers, your workers, and your managers. A truly green company is unlikely to be badly managed. Conversely, a well-managed company finds it relatively easy to be green.

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