# VALUATION ANALYSIS OF ENVIRONMENTAL DISCLOSURES

Kathryn A. S. Lancaster
Cal Poly State University

August 18, 1998

# Introduction

- Motivation
  - » Remediation Costs
  - » AAA SEC Liaison Committee
    - – Sack *et al.* (1995)
  - » Public Interest Groups
    - – Krupp (1996)
  - » Sustainable Development

# Introduction

- Contribution
  - » Examine more recent period than previous studies
    - – Barth and McNichols (1994)
  - » Consider current authoritative guidance SOP 96-1
    - – AICPA (1996)
  - » Examine incremental value of firm disclosures

# Research Questions

- Do investors value firm-specific environmental performance information provided by an external source?
- Do investors value firm-provided environmental disclosures?

# Methodology

- Stakeholder theory
  - Milgrom and Roberts (1992)
  - Gaa (1996)
- Valuation model
  - (Olson 1995)

# Valuation Model

$$MVE_i = \alpha + \beta_1 TA_i + \beta_2 TL_i + \beta_3 INC_i + \beta_4 IND_i + \sum_{j=1}^{8} \delta_j PERF_{ij} + \sum_{k=1}^{11} \delta_k ED_{ik} + \varepsilon_i,$$

where

MVE : Market value of equity for firm i,

TA : Total Assets,

TL : Total Liabilities,

INC : Income before extraordinary items,

IND : Indicator variable where "1" denotes industries with poor environmental performances,

PERF : Environmental Performance variables j refers to the jth performance measure

ED : Environmental Disclosure variables, k refers to the kth ED.

# Data Sources

- 228 S&P 500 firms
- 1994 Financial Data-Compustat CD
- 1991-1993 environmental performance data summarized by IRRC
  - Cohen (1995), Campbell et al (1996), Mitchell (1996)
- Environmental disclosures in 1994 Annual Reports

# Variables of Interest

| Variable | Source | I/C | Hyp. Sign | Description of Performance Measure |
|---|---|---|---|---|
| **Environmental Performance Measures** | | | | |
| Perf1 | IRRC | C | - | Number of Superfund sites Company is a PRP |
| Perf2 | IRRC | I | - | Industry comparison - Superfund sites |
| Perf3 | IRRC | C | - | Number of RCRA corrective actions required |
| Perf4 | IRRC | I | - | Industry comparison - RCRA corrective actions required |
| Perf5 | IRRC | C | - | Total pounds of toxic chemicals released |
| Perf6 | IRRC | I | - | Industry comparison - toxic chemicals released |
| Perf7 | IRRC | C | - | Total value of penalties |
| Perf8 | IRRC | I | - | Industry comparison - penalty costs |
| **Environmental Disclosures** | | | | |
| ED1 | 10-K | I | - | Statement that effect on financial position is substantial |
| ED2 | 10-K | I | - | Description of legal proceedings |
| ED3 | 10-K | I | | Statement that firm accrues remediation estimates |
| ED4 | 10-K | I | + | Statement that firm is in compliance with regulations |
| ED5 | 10-K | I | | Range or qualitative statement about current year environmental costs |
| ED6 | 10-K | I | - | Range or qualitative statement about future environmental costs |
| ED7 | 10-K | I | - | Range or qualitative statement about total remediation costs |
| ED8 | 10-K | C | | Current year environmental remediation and operating expenses |
| ED9 | 10-K | C | - | Projected future remediation costs |
| ED10 | 10-K | C | + | Current year environmental capital expenditures |
| ED11 | 10-K | C | - | Projected environmental capital expenditures for 1995 |
| ED12 | 10-K | C | - | Amount of environmental accrual |

# Selected Descriptive Statistics

- 87% identified as PRP (Superfund sites)
- 23 2-digit SIC codes represented
- Primarily manufacturing
- Average of 11.6 Superfund sites, 21M pounds of TRI releases, $821,000 in penalties per firm

# Results

| Variable | Base Model | Perform. Meas. | Mand. Disc. |
|---|---|---|---|
| Constant | 18.94** | 18.23** | 20.04** |
| Total Assets | .68** | .61** | .64** |
| Adjusted Total Liabilities | -.67** | -.59** | -.61** |
| Income | 3.51** | 3.50** | 3.39** |
| Industry | -2.19 | -4.89** | -3.85* |
| perf1-Superfund Sites | | 11.27 | 12.13# |
| perf2-Superfund Index | | -1.37 | |
| perf3-RCRA Actions | | -40.89 | |
| perf4-RCRA Index | | 4.05# | 3.43* |
| perf5-Pounds TRI Releases | | -3.22# | -5.97** |
| perf6-TRI Index | | 8.40** | 7.84* |
| perf7-Cost of Penalties | | -37.86 | |
| perf8-Compliance Index | | 1.89 | |
| ED2 - Legal Proceedings | | | -3.47* |
| ED3 - Accrual Statement | | | -1.38 |
| ED4 - Reg. Compliance | | | .81 |
| ED5 - Qualitative Current | | | -.76 |
| ED6 - Qualitative Future | | | -5.29** |
| ED7 - Qualitative Total | | | -.64 |
| ED8 -Current Remediation | | | 4.53* |
| ED9 - Future Remediation | | | .11 |
| ED10 -Current Capital | | | 3.46 |
| ED11 - Future Capital | | | 4.60* |
| ED12 - Amount Accrued | | | -1.40 |
| Adjusted R Square | .441 | .485 | .546 |
| R Square | .451 | .504 | .570 |
| Change R Square | .451 | .053 | .066 |
| F Change | 45.78 | 5.82 | 8.30 |
| Significance of F Change | .000 | .000 | .000 |

# - Signif = .10, * - Signif. = .05, ** - Signif. = .01 (1 -tailed)

# Results

- Environmental Performance
  - » Information regarding “past sins” impounded in stock price
  - » Investors are concerned about financial impact of future environmental risks (-)
  - » Investors do not appear to value superior environmental performance

# Results

- Environmental Disclosures
  - » Description of legal proceedings (-)
  - » Qualitative information about future environmental activities (-)
  - » Current remediation (+)
  - » Future capital expenditures (+)

# Conclusions

- SEC and FASB concern about relevance of environmental disclosures is valid
- Additional guidance on disclosure of future environmental expenditures
- Investors perceive that capital expenditures have revenue generating/cost reduction potential