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# Environmental Risk and Commercial Banks : Discussion Paper

August 1994

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Prepared for UNEP Round-Table on Commercial  
Banks and the Environment  
26-27 Septembre 1994



Environment  
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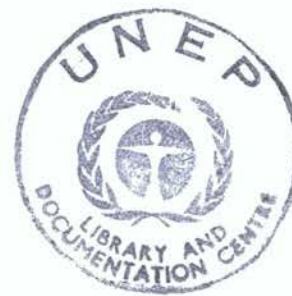
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Banks and the Environment

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Prepared by Scott Vaughan, UNEP

Environment and Trade/Environment and Economics Unit  
United Nations Environment Programme

## United Nations Environment Programme

The United Nations Environment Programme (UNEP) was established in 1972, by the General Assembly of the United Nations. As the environmental agency of the UN, its mandate is to "safeguard and enhance the environment for the benefit of present and future generations." UNEP's Earthwatch programme, for example, uses satellite data and aerial photography, in tandem with a world-wide network of on-site data collection points. Activities gather, collate and distribute environmental data. Each two years, UNEP, in collaboration with the World Resources Institute and the U.K. Department of the Environment, publishes the Environment Data Report. UNEP produces specialized data reports, including freshwater management, atmospheric pollution, marine pollution, environmental management, energy, education and training and other areas.

Another major focus of UNEP's work is environmental law, both at the international and national levels. Of the approximately 180 international environmental agreements which exist, UNEP has brokered roughly one-half, including the Montreal Protocol, Basel Convention, Convention on Biodiversity, and the London Guidelines. UNEP's Industry and Environment Office works closely with industry in developing technical guidelines, environmental management systems; cleaner production technologies; life-cycle analysis and life-cycle management. Among the publications of the Industry and Environment Office is the quarterly *Industry and Environment Bulletin*, as well as a technical series, which includes Environmental Auditing and Hazard Identification and Evaluation in a Local Community.

Since 1991, UNEP has worked with the commercial banking sector on environmental issues. In 1992, UNEP facilitated the drafting and endorsement by some 30 commercial banks of the UNEP Statement by Banks on the Environment and Sustainable Development. Today, approximately 60 commercial banks from developing, transitional and industrialized economies have endorsed the Statement. UNEP hosts an Advisory Group to the Executive Director on Banks and the Environment. Membership as of June 1994 includes Bank of America, Bank Handlowy, Credit Suisse, Deutsche Bank, European Bank for Reconstruction and Development, International Finance Corporation, National Westminster, Royal Bank of Canada, and Westpac Banking Corporation.

For more information about UNEP's work, please write:

UNEP Environment and Trade  
15, Chemin des Anemones  
CH-1219, Chatelaine  
Geneva, Switzerland

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The author is grateful to Ms. Martha Goepel for her comments, editing and valuable input, particularly related to US-hazardous waste management issues, and to Heidjer Staecker and Roger Batty for research. Any errors are the author's alone. Designations employed and the presentation of the material in this discussion paper are for information purposes only, and do not imply the expression of any opinion whatsoever on the part of the United Nations Environment Programme concerning the legal status of any country, territory, city or area of its authorities, or concerning delimitation of its frontiers or boundaries. Moreover, the views expressed do not necessarily represent the opinions of the United Nations Environment Programme, nor does citing of trade names or commercial processes constitute endorsement.



## Table of Contents

### **Introduction**

Diversity of Issues	1
Expenditures	2
Public Concern	3
Willingness to Pay	3

### **Section One: Risk and Liability**

Introduction	5
Risk to Lenders	7
European Community	8
United States	9
United Kingdom	13
Australia	15
Canada	18
The Netherlands	20
Germany	21

### **Section Two: Regulatory, Economic and Other Approaches**

Introduction	23
Standards and Competition	24
Positive Effects	25
Principles	26
Risk Assessment	27
Risk Management	27
Market-Based Instruments	28
Green Labels	30
Selected National Strategies	33

### **Section Three: International Standards and Agreements**

International Standards	38
ISO	40
International Agreements	41
Basel Convention	41
Climate Change	43
Montreal Protocol	44
Long-Range Air Pollution	45
Freshwater	45
Marine	46
Biodiversity	47
GATT/WTO	48
GEF	49

### **Section Four: Investment Trends and Management Tools**

Green Investment	50
Cleaner Production	50
Pollution Prevention	51
Responsible Care	52
Accounting	53
Impact Assessment	57
Auditing	62
Corporate Reporting	65

### **Conclusion: Selected Environmental Issues**

New Partnerships	67
Issues	68

### **Appendix A**

Statement by Banks

### **Appendix B:**

U.S. Waste Management/Superfund



## Introduction

### Environmental Risks and Commercial Banks

#### Diversity of Issues:

\* In June 1994, a Union Carbide plant in California became first in line in selling 3.4 million "pollution credits" for nitrogen oxide emissions. The value of the sale: \$US1.2 million. The purchaser, a glass manufacturing company, was able to buy extra credits to meet emission targets under the newly established State of California tradeable emissions scheme.

\* According to the British Antarctic Survey, released last month, recent observations have indicated warming trends 10-times faster than previous rates. Scientists have raised alarm about the effects of pollution on climate regimes, warning of the "absolute proof" that climate change is underway.

\* In June 1994, the Canadian timber industry agreed to an 80 percent increase in stumpage (cutting) fees to the British Columbia government. Expected new revenues: C\$2 billion.

\* An April 1994 study by the University of Chile, concluded that \$435 million is lost each year, mainly through health problems linked to high air pollution levels in Chile.

\* In March 1994, US insurance and industry reached agreement to establish the Environmental Insurance Resolution Fund of up to \$8.1 billion, for coverage of waste dumped prior to 1986.

\* According to a June 1994 report by the US EPA, Energy Department, the Coalition on Superfund and Chevron, Superfund clean-up costs over the next 30 years could exceed \$1 trillion.

\* Recent estimates suggest that the global market in waste management is estimated at \$90 billion per year, and some forecasters -- eyeing stricter standards -- predict that will jump to \$500 billion by the year 2000.

\* In March 1994, doctors from 11 countries ruled that the potential claims of 400,000 people adversely affected by the Union Carbide Bhopal disaster were "genuine."

\* In June, 1994, a federal court jury found Exxon responsible for reckless operations in connection with the oil spill. Exxon faces civil claims for damages from as many as 13,000 plaintiffs: damages may exceed \$15 billion. This is above the estimated \$3.5 billion Exxon has already spent on clean-up operations, following the oil spill involving the *Exxon Valdez*.

\* In February 1994, Indonesia announced plans to begin rating the environmental performance of companies, with results of environmental audits made available to banks, insurance companies and foreign investors.

\* In June 1994, former employees at an electric transformer in Massachusetts filed a lawsuit against General Electric and Monsanto Chemical Corp., claiming that long-term exposure of PCBs and other carcinogens had affected their health. Similar lawsuits are expected to be launched elsewhere, with claims expected to run into tens of millions of dollars.

\* In June, 1994, the United Kingdom Atomic Energy Authority estimated that clean-up costs for decommissioned nuclear power plants in the UK could exceed £8.2 billion.

The above highlights some recent examples of issues which fall under the rubric of "the environment." They underline the huge diversity of issues related to the environment; the highly dynamic nature of the companies involved in the production and marketing of environmental goods and services; and the enormous risks associated with the environment.

A growing amount of work is underway, involving industry, governments, international organizations, academics and citizens groups, in finding new solutions to worsening environmental problems. While the future course of regulations is in an important period



of transition, there is no doubt that environmental indicators show that ecological deterioration is accelerating, and expanding.

In recent years, more and more commercial banks, as well as bankers' associations, are becoming involved in environmental issues. There are two main reasons.

*One*, as an area of increasing economic importance, prudent lenders are keeping track of major regulatory and other developments which affect the asset value of existing borrowers, and which offer potentially new investment markets.

*Two*, commercial banks remain concerned about potential liabilities which they may encounter, either from direct and indirect environmental liability. Of these, the issue of direct lender liability continues to overshadow the intersection of commercial credit and environmental issues.

There are welcome signs that is changing. Recent developments, such as agreement on an environmental insurance scheme in the US, or proposed EC conventions seeking to clarify lender exemptions in liability issues, are signs that the deadlock which surrounds lender liability may be easing.

It is important that it does so, given the evidence that the lender liability has prompted lenders to strengthen legal positioning against potentially unfair liability exposure, while at the same time diminishing the amount of finance available via debt and equity finance to begin the huge task of cleaning up pressing environmental problems, and investing to prevent new ones.

From both an environmental and economic perspective, uncertainty over lender liability is proving to be counter-productive. New solutions are needed which engage the financial services sector. Such solutions might include increased leveraging of public-sector finance in new investment projects, coupled with secured lender exemptions for future liability. These kind of scenarios need to be

examined. At the same time, liability needs to be clarified and strengthened, whereby owners and operators responsible for pollution are held accountable, under the Polluter Pays Principle approach.

The purpose of this discussion paper is to provide lenders -- particularly lenders that have recently begun to address environmental issues -- with a "snapshot" of some key issues. It begins with an overview of current and projected expenditures, employment figures and types of activities fall under the rubric of environmental protection.

### Expenditures and Employment

Expenditures linked to environmental management gives some idea of its growing economic clout. A 1993 report of the United States General Accounting Office (GOA) estimated that, since 1970, U.S. government and industry have spent more than \$1 trillion complying with environmental regulations.

By the year 2000, U.S. expenditures to meet current legislative requirements will exceed US\$160 billion per annum, or 2.8 percent of GDP (1986 dollars.)

Most other OECD countries have similar regulatory compliance current and forecast expenditures, while many developing countries are allocating more resources towards environmental protection.

Environmental investments are also playing an increasingly important role in transitional economies. A recent UN survey, for example, estimated that 40 percent of environmental technologies produced were destined for emerging markets in the Asia Pacific region.

It is now clear that environmental issues have shifted from regulatory issues, to big business. In Canada, for example, an estimated 4,500 small, medium and large-scale companies, employing 150,000 people, are involved in the environmental sector. The Canadian domestic market for environmental goods and services -- ranging from waste management technologies



to pollution filters -- is estimated at \$11 billion per annum, of which \$5 billion stems from the services sector, and \$6 billion from the manufacturing sector.

In the U.S., annual investment in energy efficiency is estimated at \$1.3 billion, employing 80,000 jobs in the energy sector alone.

In Germany, over 750,000 people in Germany are now directly employed in environmental products, services and protection. Anticipated expenditures in the European oil sector for environmental expenditures is \$10 billion.

According to the *Environment Business Journal*, the market for environmental services in Western Europe was \$94 billion (1992). Estimates put the growth of European environment sector at approximately seven percent per annum. Already, an estimated 16,000 environmental firms operate in Europe: over one-half are small businesses, with annual sales of less than \$2.5 million.

Increasingly, larger firms are entering such environment-related markets as waste reduction, end-of-pipe scrubbers, waste treatment facilities, and other technologies. In retro-fitting and abatement technologies, for example, larger firms, such as Fläkt (part of the ABB group) and Lurgi (part of Metallgesellschaft), are dominant players.

Future expenditures on pollution reduction and waste clean-up underline the longer-term, high-growth prospects. The World Bank, for example, estimates that \$38 billion per year will be needed to begin comprehensive clean-up operations in the Asia Pacific region. Current expenditures on environmentally-related products and services in the East Asian economies are doubling every ten years.

### **Public Concern**

Many reasons explain the steady economic ascent of the environmental agenda. They include, for example, the scientific discovery of new environmental risks over the past

decade, as well as clarification of health risks associated with chemical and other contaminants.

However, the most compelling reason is an unwavering public demand for environmental quality. Environmental issues have been and remain, a serious public concern, shared by both developing and developed economies.

In a recent survey of 24 developed and developing countries (conducted by the George Gallup International Institute), public concern about the environment ranked very high. When asked to rank environmental quality, for instance, a large majority thought the global environment was "very" bad or "fairly" bad.

That characterization cut across economic lines: in Poland, Chile and Russia, for instance, 88 percent rated the global environment in this category. In Germany and Switzerland, the figure was 86 percent; in Canada, 79 percent; in United Kingdom, 76 percent; in Uruguay, 74 percent, and in Mexico, 70 percent.

### **Willingness to Pay**

Such strong public concern about environment quality is a long familiar issue to policy-makers. Yet, what is "new" about environmental issues is the translation of concern into bottom-line, market trends. In the same Gallup Institute survey, a majority of people in most countries said that they would pay higher prices, for better environmental quality.

In Denmark, the figure was 78 percent; in South Korea, 71 percent; in the United Kingdom and Switzerland, 70 percent. A July 1994 survey by EDK Associates found that 63 percent of female consumers in the U.S., for instance, said that they looked for green-labelled products, because of high levels of environmental concern.

This willingness to pay is reflected in many market-based initiatives. They include greater public acceptance of various fiscal policy instruments, including pollution taxes, special



charges and other market-based instruments. The OECD estimates that economic instruments to help achieve environmental objectives have either doubled or tripled in the last five years.

Another, less clear example of willingness to pay is the increase in national eco-labelling schemes, intended to provide concerned consumers with information about the environmental characteristics of products. To date, an estimated 25 different national eco-labelling schemes have been launched, or are being developed.

For lenders, these two trends alone are of considerable importance. Expanded use of fiscal policy instruments will have important implications to borrowers -- particularly in natural resource extraction and pollution intensive sectors -- in terms of creating new systems of incentives and disincentives.

Increased use of eco-labelling schemes, coupled with the development of new international standards under the International Standards Organization and proliferation of increasingly focused industry codes of conduct, are all of direct relevance to lenders, in terms of identifying companies and products with good environmental performance standards. Such information is also highly useful to lenders, in helping to determine due diligence procedures.

This discussion paper, to be used as a background note for the UNEP Roundtable on Banks and the Environment (held 26-27 September 1994) is divided into the following sections:

*Section One* provides information on potential risks to lenders, and discusses selected national cases and industry responses to lender liability issues.

*Section Two* provides information on general trends in environmental command and control and market-based approaches to environmental management. Information on selected national approaches to environmental issues is also

provided.

*Section Three* provides information on general trends at the international level, including the development of voluntary industry codes of conduct; recent initiatives under the International Standards Organization; and an overview of some international environmental legal instruments

*Section Four* provides information on trends and tools in the environmental agenda of interest to lenders. Included is information on green mutual and other funds; industry initiatives in waste reduction and cleaner production; and current issues and initiatives related to environmental accounting; environmental impact assessment; environmental auditing; and corporate environmental reporting.

The final section provides some concluding remarks on the need for stronger partnerships involving the financial services sector, and an overview of some of the acute environmental problems which make that partnerships more compelling than ever.

## Section One: Risk and Liability

### Introduction: Paying for the Mess

Legislation related to the clean-up of contaminated lands and sites is of key importance to industry, and industry creditors. As pressure to finance environmental remediation grows, some legislators have unfortunately looked to the financial services sector as a potential source of funding for the environmental damages inflicted by their borrowers.

Accordingly, the most compelling reason why lenders are concerned about the environment is direct liability. Although progress has been made, uncertainty over this issue is counter-productive. In an understandable effort to shore up legal defenses against potential lender liability, important opportunities involving partnerships with the financial services sector are being missed, in areas as diverse as debt for environment swaps, the financing of joint implementation, etc.

The issues of direct lender liability continues to create uncertainty, a perception of unfairness, and an increasingly defensive posture of the part of many banks. In an industry which, more than most, covets predictability and stability, several fundamental questions related to contaminated site clean-up remain unclear. In the words of a former U.K. Secretary of the Environment, those questions include: *Who pays? How much? When? Who decides? How clean is clean?*

From an environmental perspective, it is clear that a growing backlog of severely contaminated properties must be addressed. It is also clear that responsibility for remediation must be assigned fairly, and with transparency. As almost all national bankers' associations argue, the application of the Polluter Pays Principle is the first-best option in site remediation.

However, environmental policy more often than not has to contend with second and third-best options. New solutions, such as the

creation of a liability fund in the US, or the polling of resources for environmental insurance in the Netherlands, are preferable to across-the-board lender liability. The threat

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**Following the Fleet Factors decision, an American Bankers' Association survey found that 62.5 percent of US community commercial banks rejected loan applications or potential borrowers because of possible environmental lender liability.**

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has already been counter-productive from an environmental perspective: it creates a powerful disincentive to debt and equity finance to be involved in clean-up operations desperately in need of additional capital.

There is a need for more certainty and predictability in clean-up legislation. And there is a need for countries in which legislation is quickly taking shape -- especially in privatization and related legislation in Eastern and Central Europe -- to avoid the mistakes of past approaches, and seek new partnerships involving public-private sector leveraging of finance for remediation and other environmental goals.

In light of the scarcity of pollution liability insurance, for example, lenders in many industrialized countries have gone to considerable length to second-guess what might constitute thorough procedures for due diligence. This is reflected in a mushrooming of environmental audits; in the use of special covenants for loan, whereby legal assurance is sought from the borrower that they are in compliance with all regulations; in the use of mandatory bonds to be posted by borrowers to cover potential future liability. Most banks have introduced complex, operational procedures to reduce potential risk exposure during loan-work outs.

UNEP has welcomed the integration of



environmental awareness and environmental considerations in commercial banking operations. The more banks, capital markets and other segments of the financial services sector know about environmental issues, the better. Although there has been progress in integrating environmental procedures in commercial credit, progress remains thwarted, for the simple reason that too much energy is spent to secure defensive positions against unfair and undue lender liability.

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**Clean-up costs for one gas station in New Jersey included: \$600,000 for clean-up equipment; \$500,000 to run the equipment; and annual operating costs of \$50,000. In comparison to other sites, this is an example of a highly efficient, and relatively inexpensive, operation.**

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Once again, from an environmental perspective, if a small percentage of the time, resources and talent that has gone into avoiding legal liability focused instead on finding new solutions to clean-up and environmental management issues, progress might be made in tackling a growing list of environmental issues. It is clear that new solutions are needed, especially in Eastern and Central Europe, as well as in rapidly industrializing economies. It is also clear that current regulatory uncertainty does not encourage the exploration of new solutions.

**Restricting Credit:** Lender liability has already restricted credit access to companies involved in waste management or other environmental management systems. An American Bankers' Association survey, conducted immediately after Fleet Factors (1990) found that 62.5 percent of community commercial banks rejected loan applications or potential borrowers based on the possibility of environmental liability. Another 45.8 percent had discontinued altogether the financing of some sectors, such as gasoline service stations

or chemical businesses, because of liability.

**One Gas Station Clean-Up:** The ABA survey should not have come as a surprise, given that environmental clean-up costs, even for small operations like gas-stations, can be very expensive. To illustrate, an abandoned gas station in Lakehurst, New Jersey was found to have experienced several petroleum spill during the mid-1980s.

The State of New Jersey stepped in, as an emergency action. The storage tank was removed, soil excavation started, a groundwater pump and treatment system installed. The groundwater pump is used to pump groundwater from the upper aquifer: the system requires a dual air stripper, to strip off volatile organics prior to the discharge to surface waters. In addition, twelve vapor extraction well as used to vacuum out gases, which are then fed through a carbon unit prior to the release into the air.

The cost of installing the original equipment is in the vicinity of US\$600,000. Cost of operations and maintenance since the discovery of the site: \$500,000. Annual operating costs: \$50,000.

This is an example of an effective, and relatively inexpensive, contaminated site clean-up operation. For many remediation and operations in the US, administrative costs alone can run in the vicinity of \$45,000 per year.

**Site Estimates:** In the United States, an estimated 5,000-7,000 hazardous waste sites have been identified in need of clean-up. Another 20,000 will likely need remedial action. In the former West Germany, as many as 35,000 abandoned industrial sites have been identified as in need of clean-up. Average clean-up costs under a US Superfund sites are \$31 million. Some estimates have suggested that clean-up costs in the US could reach as high as \$500 billion. In the Netherlands, clean-up estimates are set at \$5.6 billion over the next 15-20 years.



### **Overview: Risks to Lenders**

As noted above, a key issue for lenders concerns the potential liability they face, as governments move to clean-up contaminated sites.

However, in addition to lender liability issues, there are numerous financial risks which banks can face related to lender and other clean-up liabilities. Some risks include:

(1) that the collateral for a real estate or property to be acquired may be drastically reduced in value, after discovery of the existence of hazardous waste contamination;

(2) that the borrower cannot repay a loan, if the borrower must face site clean-up costs for a contaminated property. Fines, penalties and clean-up costs can weaken the financial performance of a borrower, including undermining the capacity of the borrower to repay loans;

(3) that a mortgage may lose priority to legal requirements that the clean-up takes precedence over loan repayment. Some US federal bankruptcy proceedings have indicated a superior lien for clean-up costs over loan repayment actions, to be paid out of claims against the bankrupt estate;

(4) that a lender might be liable to the extent of any credit extended to any debtor which has operated property containing hazardous wastes, which has generated such wastes, or which has transported wastes in an improper manner. Concern remains that potential risks may be extended to all creditors, and not just those creditors which hold as collateral property which contains hazardous wastes;

(5) that a creditor may become directly liable for clean-up costs, if the creditor forecloses on a contaminated property owner, becomes involved in the management of the company, or becomes involved in decisions related to the disposal of toxic or hazardous wastes;

(6) that a lender may not be able to pursue its

foreclosure options on defaulted loans for fear of liability clean-up costs, thereby leaving little option but to "walk away" from its loan security;

(7) that a borrower does not maintain collateral or property with an environmental risk potential in an environmentally-sound manner, thereby facing direct liability for clean-up costs; and,

(8) that, aside from statutory liabilities that can be imposed on toxic waste contamination, there is potential liability for personal injuries or property damages, including civil damages.

**Risks and Banks:** Managing risk is the bread-and-butter of bankers. Yet, many banking associations have noted that lenders can find themselves in a difficult position regarding direct liability issues, because (a) the degree of risk is unknown; and (b) the management of risk is outside of the competence and jurisdiction of the creditor.

In a 1993 position paper of the *Australian and New Zealand Environment and Conservation Council*, entitled Financial Liability for Contaminated Site Remediation, the point is made that, prior to lending, banks seek to establish if the potential business/borrower is:

- \* Able to meet its obligations to the bank;
- \* Conducting its business in a prudent and professional manner;
- \* Ensuring that the business has complied with all relevant laws, including obtaining all necessary environment approvals.

The *Council* argues that "the effectiveness of this process will largely depend on the accuracy of the information which the borrower has given to the bank. If a bank doubts that the borrower can conduct a successful and viable business, or that the business has complied with all necessary laws and has obtained the necessary approvals, the request for a loan will be probably be denied."



However, the Council also argues that since banks are not in a position to directly monitor the day-to-day operations of the borrower, or to "police" the regulatory compliance of the borrower, they are left in a tenuous position of being potentially liable to pay for any residual liabilities connected with a borrower's contaminated land.

The following section is intended to provide an overview of some current liability legislation, recent history of the issue, and selected positions of associations in attempting to clarify the liability issue.

### **European Community**

An important objective of the EC, under its Fifth Environmental Action Programme (1993-2000) is to establish an "integrated Community (Union) approach to environmental liability."

The **EC Draft Directive on Civil Liability for Damage Caused by Waste**. The draft Directive proposes to establish rules for implementing the Polluter Pays Principle, which was accepted by EC member states in 1987, as well as under the OECD in 1972. Little progress has been made in this complex area, and until the Directive is passed, liability laws at the national level remain.

However, under the draft Directive, liability for environmental damage would be imposed regardless of fault. That is, liability would be strict, joint and several. Liability could therefore be imposed on companies which generated the pollution or contamination, or, on the persons in control of the waste when the incident causing the contamination occurred.

Liability for harm which could be imposed would include bodily injury, damage to property and environmental damages. There are no limits to possible damages, except that the producer clean-up liability would be limited where costs substantially exceed benefits of full remediation (ie. a return to a

pristine environment).

Under the draft Directive, it will be possible to launch a liability motion up to 30 years after the contamination occurred. However, a three year statute of limitation would be imposed, if the plaintiff was aware, or should have been in a position to be aware of, damages when the occurred.

**Average cost of a Superfund site is \$31 million.**

In 1993, the also EC issued a **Green Paper on Remedying Environmental Damage**. The Green Paper does not deal with fault-based liability, but rather adopts a strict, strict joint and several liability approach. It proposes a special fund to clean up or restore damaged sites. The fund would be financed by those sectors most closely associated with environmental damages requiring remedial action. The approach would be an attempted enforcement of the Polluter Pays Principle, without over concern for past liability.

The proposed approach is that, while the individual company responsible for the damage cannot always be identified, the broader sector can, and should help bear the cost of clean-up.

The EC Green Paper notes that:

*Lessons must be learned from national and international precedents in strict liability and the disadvantages and implications for the scope and structure of such a regime must be foreseen (how lenders and financial institutions will be affected, for example. A strict liability regime must only have the result intended, namely the restoration of environmental damage. (4-1-2c)*

The **Council of Europe's Draft Convention on Civil Liability** establishes a system of strict liability related to environmentally-dangerous activities. These include the production, handling, storage, use or discharge of dangerous substances, such as chemicals or toxic wastes. In addition, the draft Convention covers genetically modified organisms, which



is of direct relevance to the biotechnology and pharmaceutical sectors.

The Convention also identifies operators of waste incineration, waste treatment, waste handling, waste recycling and waste disposal sites (landfills) as being open to systems of strict liability.

The draft Convention is of interest to bankers, in relation to the inclusion of exemptions to strict liability. Responsibility in the Convention is placed on the "operator" -- defined as the person who exercises the control over the dangerous or environmentally-damaging activity. However, in discussing strict liability, the Convention notes:

*An outside person who made possible or facilitated a dangerous activity, for example, by lending funds for investment may not be considered to be the operator, unless he exercises effective control over the activity in question. Likewise, a creditor who exercises his rights in virtue of securities held on equipment for the dangerous activity is not, in principle, the operator within the meaning of the Convention.*

Some have argued that, although going in the right direction, the Green Paper is flawed for several reasons: (1) extending the scope of liability for environmental damages to cover environmental damages to common property is not the appropriate route, and should be handled through regulations, not civil liability.

(2) the Convention would extend the application of strict liability for environmental damage, even though the definition of strict and fault-based liability provisions were, within the context of the Convention, unclear;

(3) the Convention would give too much power to non-governmental organizations, by certifying special legal status with regards to civil action for environmental damages.

### **United States**

The centre of lender liability concerns is the

United States. This is mainly in response to the manner in which liability issues were addressed in the late 1980s and 1990 in US courts.

After a prolonged period of uncertainty, it appeared that clarification was forthcoming regarding lender exemptions, in the form of EPA Lender Rules, intended to clarify liability issues. However, a recent US Court of Appeals has ruled that the EPA can have no authority to issue rules on liability. A February 1994 submission by the American Bankers Association to the U.S. Subcommittee on Transportation and Hazardous Materials has starkly observed that this ruling "puts a cloud over all lending activity."

The *Resource Conservation and Recovery Act* (RCRA, 1976) was enacted to ensure the safe management of wastes from "cradle to grave" (generation to disposal) and to ensure the proper closure of hazardous waste facilities.

The Hazardous Waste and Solid Waste Amendments (1984), under section 3004 (a)(6), made RCRA requirements broader and stricter, including procedures for labelling, transportation, disposal, notification, and other procedures. RCRA was enacted essentially to prevent the contamination of sites by hazardous wastes, and outlines requirements (including financial responsibility) to ensure hazardous waste operators can meet potential liability costs.

The *Comprehensive Environmental Response, Compensation, and Liability Act* (CERCLA) is a remedial regulation to clean up existing contaminated sites. Under this Act, Superfund was created, with an original allocation of \$1.6 billion, increased in 1988 to \$8.5 billion. CERCLA allows the EPA to proceed with the clean-up of a hazardous waste site in one of two ways:

(1) EPA can initiate a clean-up, and then sue the potentially responsible parties for reimbursements and

(2) EPA may request a court to issue a clean-up order against responsible parties, provided



there is a public health threat. The responsible party can be held liable for all costs of removal and/or remedial action. In addition to costs incurred, responsible parties are liable up to \$50 million in damages to natural resources. CERCLA provides for strict, joint, and several liability for the cost of removing and remedying a release or threatened release of hazardous substances and for harm to natural resources.

A party will be held liable when it is proven that : (1) a release or threatened release of a hazardous substance exists; (2) response cost were incurred; and (3) the person falls into one of four classes of responsible parties who, regardless of fault and/or intent, can be held liable for clean-up and damages caused by the release of hazardous wastes:

**Scope of liability:** Liability under Superfund identifies four types of persons liable:

- (1) The current owner and operator of a contaminated facility;
- (2) The owner or operator of the facility when the hazardous substances were disposed;
- (3) Any person who arranged for disposal of a hazardous substance at the contaminated facility;
- (4) Any person who accepts hazardous substances for transport to disposal or treatment from which there is a release.

Lenders face potential liability under Superfund, mostly in relation to interpretation of the "current owner or operator" clause, or when the lender is involved in the management of the liable company.

Under U.S. corporate law, a surviving corporation is held liable for all the debts, contracts and torts (including environmental liability) of the predecessor corporation, regardless of when the merger took place. The scope may include shareholder liability, liability of parent corporations for the acts of a subsidiary company.

**Case History:** (1) In an early case, mortgages on two badly contaminated properties exceeded the properties' value and the added cost of a state-mandated clean-up, whereby the properties burdened the bankrupt estate. The trustee sought to abandon the properties so that the title would revert to the debtor. The U.S. Supreme Court (1986) held that under the Bankruptcy Code, a trustee may not abandon property burdensome to the estate in contravention of state laws where the law is calculated to protect public health. The court required the trustee to use the estate's assets to pay for the clean-up costs.

(ii) *United States vs. Whizco Inc.* (1985) The Sixth Circuit Court of Appeal held that a bankrupt company remains liable for clean-up or reclaiming an abandoned site despite bankruptcy discharge. The liability is, however, limited to non-pecuniary obligation to reclaim the site.

(iii) *Midland National Bank vs. New Jersey Department of Environmental Protection* (1986). The State Supreme Court refused to allow a bankruptcy trustee to abandon a hazardous waste site contaminated with PCBs. The Court held that where clean-up costs exceeded the value of the property, neither the debtor nor the appointed receiver "has a right to abandon property in contravention of state or local laws designed to protect public health and safety."

(iv) *United States vs. Mirabile* The court held that a hazardous waste site owner's secured creditor may be liable for response costs under CERCLA section 107 if the creditor exercised control over the daily operations of the borrower. The court, however, distinguished between the day-to-day operations and financial involvement.

Accordingly, the Mirabile court concluded that ABT, a creditor which merely foreclosed on the collateral property after all disposal operations had ceased and who took all prudent and ordinary steps to secure the property, would not be liable. The court also determined that SBA, the creditor which had



authority to participate in the management of the company, but which did not exercise that option was not liable.

In contrast, Mellon Bank, the third Mirabile creditor, was held potentially liable. The court held that the nature of Mellon Bank's involvement in the site included monitoring the cash collateral accounts, ensuring the receivables went to the proper account, and establishing a reporting system between the company and the bank.

(v) *United States v. Maryland National Bank and Trust Co.* (1986) The court was asked to consider whether a foreclosing bank which owned the site actually "operated" the site within the meaning of subsection 107(a)(1) of CERCLA. The EPA alleged that the bank was a responsible party under section 107 by virtue of its foreclosure on the property which housed the hazardous waste site, and, as such, should be held liable for the clean-up.

The Bank defended on the basis that it was not an owner or operator. The court rejected the bank's position and held that "the exemption of subsection (20)(a), covers only those persons who, at the time of the clean-up, hold indicia of ownership to protect a then held security interest in the land." The court reasoned that the exclusion would not apply to former mortgagees, such as Maryland National Bank and Trust, which held title to the collateral after purchasing it at a foreclosure sale and holding title for nearly four years.

Activities exercised by the bank included assuming management of the debtor; obtaining the right to have a third party partly manage the affairs of the debtor; installing an agent to take over the management of the debtor's business; promising payment to other creditors on behalf of the debtor; and foreclosing on contaminated property that is held in security for a loan.

In the Maryland Bank case, actions aimed at protecting the lender's investment rather than protecting its collateral brought the lender within the definition of "owner" or "operator"

under CERCLA.

(vi) *United States vs. Fleet Factors Corp.* (1990). Seeking to impose liability for costs related to the removal of hazardous wastes and asbestos from a bankrupt cloth printing facility, the federal government filed action under CERCLA against the sole shareholders and creditor, the Fleet Factors Corporation, who held security interest in the facility. The court reasoned that the construction of the secured creditor exemption is an issue of first impression in the federal appellate courts.

The government urged the court to adopt a narrow and strictly literal interpretation of the exemption that excludes from its protection any secured creditor that participates in any manner in the management of the facility.

The court declined the government's suggestion because it would largely eviscerate the exemption Congress intended to afford to secured creditors. Fleet Factors Corporation, argued that the court adopt the distinction defined by some district courts between permissible participation in the day to day or operational management of the facility.

In *United States vs. Mirabile*, the first case to suggest this interpretation, the court granted summary judgement to the defendant creditors because their participation in the affairs of the facility was "limited to participation in financial decisions." (No.84-2280, slip op. at 3). The court held that participation "which is critical is participation in operational production or waste disposal activities. Mere financial ability to control waste disposal practices...is not...sufficient for the imposition of liability."

After the financing agreement between Fleet Factors and the owner/operator, Swainsboro Print Works, ended in 1981, Fleet Factors never actually foreclosed on the real property. However, Fleet Factors did foreclose on some inventory and equipment after obtaining bankruptcy court approval. This inventory and equipment was auctioned through a liquidation company. Any equipment not sold or removed



by purchasers were to be removed by another company, Nix Riggers, with whom Fleet had made an agreement.

*Fleet* had allegedly incurred CERCLA liability by participating in the management of the Swainsboro factory. The court decided to determine participation by dividing Fleet's actions as those before and those after foreclosure. The district court determined that Fleet's actions before foreclosure did not constitute participation. However, those actions after foreclosure, including the auction and removal of equipment, could constitute participation.

Since the government provided evidence that a genuine issue of material fact existed, the District Court denied the request for summary judgement, and submitted the case to the Eleventh Circuit Court.

The Circuit Court argued that the statutory exemption is too permissive towards secured creditors involved with toxic waste facilities. The court found that a secured creditor may incur section 9607(a)(2) liability without being an operator, by participating in the financial management of a facility to a degree indicating a "capacity to influence" the corporation's treatment of hazardous wastes. In other words, the secured lender need not necessarily be involved in the everyday operations of a plant in order to be held liable. Furthermore, a secured creditor is liable if it makes managerial decisions for the debtor, but also if it has enough influence to affect hazardous waste disposal if it so chose.

The American Banker's Association asked the U.S. Supreme Court to overturn the decision in *Fleet Factors*. The Court refused to hear the case, but the ABA did manage to draw attention to the fact that the lender exemption in Superfund needed to be clarified.

The interpretation of "security interest" exemption under CERCLA has created concern in lending communities following the *Fleet Factors* decision over whether certain actions normally undertaken by the holder of a

security interest, such as monitoring facility operation, refinancing, and providing financial advice, should be interpreted as participating in the management of a facility, thereby prompting potential liability. The *Fleet Factors* decision has subsequently been regarded as a judicial anomaly arising from unclear legislative drafting.

**U.S. Legislation:** After *Fleet Factors*, Several Bills were introduced to the US Congress, in efforts to help clarify liability under Superfund. Representative John LaFalce, Chairman of the House Small Business Committee, introduced a bill (H.R.1450) in March 1991 with 123 co-sponsors aimed at protecting small firms that have been deprived of credit due to lender liability concerns. A similar bill was introduced in the Senate by Sen. Jake Garn.

The Garn bill (S.615) was intended to limit liability, from "under any federal law imposing strict liability for the release or threatened release of a hazardous substance" from certain properties, for an insured depository institution to the "actual benefit" received by the institution for the clean-up undertaken by another party. However, none of the bills introduced ever made it through the entire law making process.

In 1993, several of these legislative initiatives were reintroduced into the Senate and Congress in slightly revised forms. The most important legislation to be passed, however, in the last two years is the Environmental Protection Agency's (EPA) Lender Liability Rule.

#### **EPA Rule on Lender Liability**

The EPA Lender Liability Rule, which became final on April 29, 1992, is intended to provide an exemption permitting private and government lending entities to monitor and protect their security interests, provide financial advice to distressed borrowers, and to foreclose on the interest, without incurring liability under CERCLA.

The proposed rule specifies that as a risk



management measure consistent with good commercial practice, an environmental inspection is considered to be probative evidence that the totality of a security holder's actions are consistent with Section 101(20)(A) exemption.

In this rule, the EPA is interpreting the CERCLA Section 101(20)(A) "security interest exemption" to clarify the range of activities that may be undertaken by a private or government lending institution that holds a security interest in a facility in the course of protecting the security interest, without being considered to be participating in the facility's management, and thereby voiding the exemption.

The "Specified Activities" rule provides that a security holder may require clean-up of a facility prior to or during the life of the loan; may require from the facility owner or operator assurances of compliance with applicable federal, state, and local environmental and other laws, rules, and regulations during the life of the loan; may periodically or regularly monitor or inspect both the facility (including regular inspections) and the facility owner or operator's business or financial condition; may provide periodic financial and other advice to a financially distressed debtor; or may take other actions that are necessary for the lender to adequately manage the debt.

The Rule also defines underdefined terms of exemption from CERCLA: "indicia of ownership," "primarily to protect a security interest," and "participation in management." "Indicia of ownership" is defined by the Rule as evidence of an interest in real or personal property held as security for repayment of a loan or satisfaction of some other obligation. Such indicia would include mortgages, deeds of trust, and liens.

"Protection of security interest" has been clarified to mean the act of holding an interest in a property in order to protect a security interest.

This type of protection would not incur

liability. However, holding a property for investment purposes would leave the lender open to liability questions. This consideration allows lenders to safely foreclose on property, without the fear that the act of foreclosing on a property itself might void the exemption. Specifically, foreclosing on a property would not incur CERCLA liability. However, the property would have to be put up for sale within 12 months.

**The EPA Lender Liability Rule (1992) was intended to clarify liability exemptions.**

The question of what constitutes "participation in management" of a company has caused the most difficulty in terms of defining the limits of the lender exemption in CERCLA, because "participation" was never clearly defined. The EPA Rule focuses on the role of the lender from the inception of the loan and during the loan.

The lender can be liable if it takes managerial responsibility in any form of waste management operations, including setting policies and procedures, for the duration of the loan, or managerial participation by overseeing disposal operations.

Although the rule does not consider liability due to participation after foreclosure on a security interest, it does not rule out liability under CERCLA on different grounds after foreclosure. Participation does not include review of borrower's compliance with environmental laws or engaging in a loan work-out.

### **United Kingdom**

Liability laws in the U.K. are not covered under one, comprehensive legislation related to the management of contaminated sites. Rather, there are several laws, dealing with different waste management issues. For example, separate legislation exists for the transportation of wastes, disposal of wastes, importation of



hazardous materials, management of industrial sites which generate wastes, as well as

**"Funds which could have gone to clean up damage or generate production have been dissipated in legal action."**

**Former U.K. Secretary of State for the Environment.**

legislation related to the management of industrial and chemical accidents.

In 1990, the U.K. Government introduced the *Environmental Protection Act*. Section 143 of the *Act* proposes the register of contaminative uses of land. The broad objectives of the section are to:

- (a) avoid unacceptable risks to human health and the environment;
- (b) wherever practicable, transform contaminated lands in beneficial uses;
- (c) avoid setting unaffordable clean-up objectives, which may drive away investment, lending and development from "brownfield" or dirty sites, and place more pressure on "greenfield sites."

Despite the absence civil liability cases, lender liability remains a key concern of U.K. banks. The main fear is that the US Superfund experience will be replicated either in the UK, or under EC Directives. In 1993, the UK Secretary of State for the Environment indicated that the US Superfund experience was filled with errors, which the UK did not wish to repeat. He noted that "several liability provisions have produced a system which is widely criticized as inefficient. Funds which could have gone to clean up damage or generate production have been dissipated in legal actions. I am determined to avoid that wastage of resources here."

At the same time, the Minister noted that CERCLA had deterred further contamination.

The 1993 Advisory Committee on Business and Environment (ACBE) Finance Sector Working Group issued a Position Statement on lender liability. It warns at the outset that uncertainty in lender liability is deterring lenders and insurers from conducting business.

Where "contingent liabilities are deemed too great or are indeterminable or open-ended," or where future liability is uncertain, the Statement warns that "lenders will not lend and this could seriously impede capital flows to certain sectors of industry."

**BBA Position:** The BBA states that banks are not, and should not be in a position to police the environmental performance of borrowers. The BBA argues that although environmental management is an important aspect in weighing a potential borrowers management quality, bankers are not environmental specialists. The Position Statement notes that, even if such actions were undertaken, the capacity of lenders to influence the operations of borrowers is often over-stated:

*It is sometimes argued that lenders are in a unique position, or a better position than others, to influence a business's priorities and are therefore well placed to drive forward the higher environmental standards which we all wish to see adopted. This represents a fundamental misunderstanding of the role of lenders and of the depth of involvement in the management of their borrowers' businesses."*

At the same time, the BBA recognizes that a borrower's environmental performance should be a key determinant in the success of a business. Banks will therefore look to environmental quality as one example of effective business management, and is one of the areas which banks will address in making a risk assessment of a potential borrower.

The Position Statement makes the following recommendation concerning liability:

- (i) Passive Lender Situation -- a lender should not be subject to environmental liability caused by a customer, if it has done nothing more



than provide finance in the normal course of its business and has not taken an active role in the business that has directly led to the creation of environmental damage.

Therefore a lender's exposure should continue to be, as has traditionally been the case, limited to the amount of the loan granted and effectively be capped at that level."

ii) Legal Ownership -- a lender should not incur liability merely because it holds a charge over, or is the "legal" owner, of goods or other property under the terms of a financing structure, for instance, chattel or property leasing.

(iii) Loan Procedures and Administration -- a lender should be able to conduct its normal lending practices without being regarded as being "concerned in the management" of the borrower's business, for the purposes of environmental law.

In setting out what it believes is legitimate lender interests, the BBA argues that a lender should be able to do the following activities without running the risk of potential environmental lender liability:

- seek and supervise lending covenants, warranties and events of default;
- stipulate and review environmental consultancy/audit reports covering land or processes;
- regularly obtain financing and other data from the borrower and provide ongoing financial advice;
- participate in "loan workout" activities, including: renegotiating or restructuring the terms of security, requiring payment of additional interest, exercising forbearance, providing specific or general financial advice or guidance, and exercising any right or remedy the lender is entitled to by law and under loan documentation.

However, in setting out legitimate loan-security

related activities, the BBA also states that "a lender may fall within the ambit of environmental legislation, if a bank takes control of an enterprise and continues the business operations." However, the BBA argues that taking possession of a property for purposes of security enforcement does not constitute grounds for liability.<sup>1</sup>

In seeking clarity in legislation, the BBA endorses the broad concept that the polluter should pay for environmental damages and clean-up. However, the BBA notes possible uncertainty in such defining owner and operator, in determining who is the "polluter."

With this latter goal in mind, and in recognition of the need to distinguish between past and future pollution, the ACBE concluded that: (1) Retrospective liability should not be imposed for acts that were legal or met the established environmental standards of the day; and

(2) Liability for this (past pollution) should be borne by the polluters providing legal culpability at the time of pollution. Where the polluter cannot or is not liable to pay, this should be treated as a social cost."

### Australia

Australian law related to liability is divided among jurisdictions at the Commonwealth, State and Local government authority levels. Generally speaking, liability for contamination can include:

- \* Criminal liability for the polluting activity causing contamination;
- \* Criminal liability for failure to clean-up pollution as ordered by regulators;
- \* Civil liability for the contamination of property;
- \* Civil liability for the costs of remediation of contamination;
- \* Civil liability for some other form of



damage to someone arising from the contamination of the land (as a tort action).

Liability can cover (i) the polluting activity of a company which does not comply with environmental regulations; (ii) the directors of such company; (iii) persons concerned with the management of the company; (iv) the owners of land, waste, vehicles, substances, ships and other assets; (v) the occupiers of the property; (vi) persons who cause, permit, aid or abet various non-compliance activities; and others.

Although there has not been a case in Australia comparable to activities under CERCLA, there is also broad concern about the uncertainty of Australian environmental law, as it concerns lender liability implications.

There is related concern that recent Australian law is adopting what can be characterized as a risk-based approach to environmental remediation costs, whereby clean-up costs are assigned to the current owner-operator, regardless of whether the current occupiers are responsible for the contamination.

Under *Rylands vs. Fletcher*, for example, liability is imposed on landowners for damage which result from the release of pollution and other substances from their land.<sup>2</sup>

The *State of Victoria Environment Protection Act* (1970) provides for the issue of a remediation notice to the polluter or occupier. The *New South Wales Environmentally Hazardous Chemicals Act*, 1985 and *Clean Waters Act* 1970 allow the EPA to direct the occupier to clean up sites on their property: the EPA can direct the occupier or polluter to pay for the EPA or public authority's clean-up of the site, if they have been served a remediation order, but have failed to comply.

Under the *Clean Water Act*, if the polluter is not targeted first, the occupier -- which can include the lender in possession -- can be held liable for remediation of damages which occurred prior to taking possession of the security.

Australian banks can find themselves in a position of owner or occupier, faced with liability costs, when:

(i) the lender has obtained the legal title to land or goods for security reasons, as under a mortgage, but which otherwise does not have an connection with the land;

(ii) the lender has exercised a right to take possession of property for security purposes, or appointed a receiver or manager in bankruptcy, or any other agency to the mortgagee in possession.

A key concern of lenders, and the Australian Bankers' Association, stems from uncertainty connected with such terms as "owners," "occupier," and "being conducted in the management."

In September 1993, the Australian Bankers' Association prepared a report entitled Financial Liability for Contaminated Site Remediation. The basic position of the Statement is that legislation is required, in order to establish appropriate exemptions from liability for financiers who have acted in the normal course of their lending business, and have not contributed directly to the environmental damage of the company in breach of environmental regulations.

The ABA argues that when a commercial lender reviews a loan application, it seeks to establish whether the potential borrowers (a) can meet its lending obligations, (b) conduct its business in a prudent manner, and (c) comply with laws and regulations. In making this assessment, the lender has no choice but to rely, for the most part, on the information provided by the lender.

Since lenders have no role in the various approval processes -- planning approvals, permits, works approvals, EPA licenses, trade waste agreements, etc. -- associated with environmental projects, the ABA argues that it is unfair to hold them liable for clean-up costs lying outside their area of responsibility.



In a November 1992 Position Paper of the Australian Bankers' Association, the following recommendations were forwarded:

Passive Lender Situation: A lender should not be subject to environmental liability caused by a customer, if it has done nothing more than provide finance in the normal course of its business and has taken no active role in the business that has directly led to the creation of environmental damage.

Legal Ownership: A lender should not incur liability merely because it is the "legal" owner of goods or other property under the terms of a financing structure (eg. chattel leasing);

Loan Procedures and Administration: A financier should be able to conduct its normal lending practices without being regarded as being "concerned" in the management of the borrowers business, for the purposes of environmental law. To cite a few examples, a lender should be able to seek and supervise lending covenants, regularly obtain financial and other data from the borrower and provide ongoing financial advice to the borrower, without risk of potential liability;

Enforcement of Security: Although it is understandable that a lender may fall within the ambit of environmental legislation if it takes control of an enterprise and continues the business operations, a lender who merely takes possession of property for the purposes of security enforcement should not be subject to prospective liability.

The ABA has set out a "financial institution exemption" clause which they would like to incorporate into the state legislation. The clause states that a financial institution will not be liable under state environmental legislation "by reason only that:

(a) it makes a loan or otherwise provides or continues to provide financial accommodation to any party or parties in the ordinary course of its business;

(b) pursuant to financial arrangements with

another party or parties, it holds indicia of title

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### WHO SHOULD PAY?

The Australian Bankers' Association argues against the concept of "deep pockets," whereby ability to pay for clean-up of a contaminated site obscures responsibility to pay. The ABA argues that (i) businesses involved in environmentally-sensitive activities must have the financial capacity at the outset to meet clean-up costs; and (ii) where responsibility for past contamination cannot be assigned, a "broad-based fund" should be established, paid for by all sectors of society without regard for assignment of liability.

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or is the nominal legal owner of any property;

(c) forecloses upon; appoints a receiver, receiver and manager, or agent for mortgagee into possession over; enters into possession of; or otherwise deals with land or any other property for the purpose of protecting, enforcing, or realizing upon any security; or

(d) it provides financial advice to any person or persons or otherwise carries out any bona fide activities to monitor or manage a loan or other financial accommodation."

The ABA has set out more detailed justification for liability exemptions. Suggested exemptions include:

\* "Innocent" Land Owners and Occupiers, including land contaminated by activities from an adjacent land;

\* Parties who become owners or occupiers of contaminated land by means other than purchase;

\* "Lawful" Polluters and Compliance

Certificates;

\* Exemption of Liability extended to Third Parties, except when third parties participate in the management directly relating to the pollution;

### **Canada**

Clear legislative definitions of potential liability do not exist under Canadian federal or

**The price of a smelter was \$2.2 million; clean-up costs: \$4.2 million.**

provincial laws. This is partially a reflection of the jurisdictional complexity of the Canadian system, as well as a potential lack of clarification of which actions

constitute ownership, operator or other persons responsible and liable for clean-up

No court decisions have been made, regarding direct lender liability issues. However, in a recent court case (Re: Northern Wood Preservers Inc.), a court suggested that environmental liability could be imposed on a party which takes possession of a polluting business.

Other examples of environmental liability include:

\* Lamford Forest Products Ltd., based in British Columbia, wanted to file for bankruptcy in September 1992, but failed to identify a bankruptcy trustee, which is required under Canadian law. Failure to identify a trustee was directly linked to the fact that no one would assume responsibility for the environmental hazards identified on the company's site;

\* Environmental problems at Algoma Steel Corp. in northern Ontario were deemed so severe that the clean-up costs were estimated to be higher than the value of the assets. Environmental clean-up is one of the key reasons why the steel company had enormous difficulty in finding any buyers for the property.

\* Metals & Alloys Co. Ltd., a Toronto-based aluminum smelting company, had two plant sites listed for sale at a listed price of \$2.2 million. Estimated clean-up costs for both sites were almost double the selling price, at \$4.2 million;

\* In 1990, when Bayer AG of Germany agreed to acquire the synthetic rubber division of Nova Corp. of Calgary in a deal estimated at \$1.5 billion, a key and contentious aspect of the sale was the condition that Bayer assume liability for past environmental problems at the site;

\* After donating the site of a former oil refinery to the City of Calgary, Imperial Oil now faces a multi-million dollar clean-up cost, since -- after donating the site -- it was found to be contaminated.

Although most of these examples highlight environmental risk which indirectly affects borrowers, in the Algoma Steel case, one of the main creditors, Royal Bank of Canada, faced site remediation costs in excess of \$20 million.

Canadian approaches to contaminated site clean-ups has been fragmented. However, in 1989, the federal-provincial *National Contaminated Sites Remediation Programme* (NCSRP) was introduced, to address high-risk contaminated sites. The program has a modest five-year cost-sharing plan of \$250 million: \$200 million was proposed to be directed towards the remediation of orphaned sites; \$50 million is to be directed towards the development of remediation technologies.

The majority of environmental liability legislation associated with site remediation exists at the provincial level, except for lands under federal jurisdiction. Under the *Ontario Environmental Protection Act*, for example, the scope of potential liability was recently expanded, to include owners or operators of the source of environmental contamination, as well as previous owners of operators of the site. Concerns have been raised that past



owners may be held partially liable for remediation, even if pollution occurred after the selling of the site to another owner.

A concern expressed by the Canadian financial services sector is that they face two types of risk: direct lender liability, and broader, indirect risks. On the first issue, the Canadian Bankers' Association warns that liability runs counter to the goals of sustainable development:

*Resource development and manufacturing operations in Canada have required, and will continue to require, considerable amounts of debt and equity financing. It is unrealistic for governments to assume that banks will continue to make loans to businesses in these conditions at current levels and on current terms and conditions, if financial institutions are not able to realize on real property and other forms of security that are given in return for the loan.*

*Nor will investors advance funds if the return on their investment is likely to be a liability claim rather than a dividend payment.*

The CBA argues that environmental risk faced by borrowers also "impairs the creditworthiness of environmentally risky businesses". Given the high reliance of the Canadian economy on natural resource extraction activities -- such as forestry, mining, oil and gas, and metal processing -- the CBA suggests that lenders face an indirect risk because "a large segment of the Canadian economy is subject to some form of environmental risk."<sup>3</sup>

In 1991, Canadian banks had \$2.1 billion in outstanding, non-mortgage loans in the oil and gas sector; \$775 million in outstanding loans to the mining sector; \$1 billion to the forestry sector, and extensive asset exposure in many other pollution-intensive sectors.

The CBA appears to make a case which lies outside of mainstream approaches to lender risk in particular, environmental management in general. That is, in light of the economic importance of pollution intensive sectors, the

CBA seems to be indirectly suggesting that environmental risks to borrowers ought to be relaxed -- presumably through a lower of regulations -- in order to reduce indirect risks to banks. This is not a tenable position from an environmental perspective, and tends to miss the point that remedial action now is generally far less expensive than remedial action later.

With regards to direct liability, a lender will not usually incur liability by holding a security interest in real or personal property or it realizes on receivables. However, it could incur direct liability by realizing on and taking possession of real property security. Furthermore, neither federal nor provincial legislation provides for a secured creditor exemption or an innocent land owner defence, such as in the United States.

In order to address direct liability issues, the CBA has issued Guidelines For Limiting Environmental Risk, which outlines steps lenders should take in ensuring environmental due diligence. These steps include: (i) identifying potential environmental problems; (ii) evaluating legal and credit risks posed by environmental problems; (iii) structuring the terms of the loan, administration of the loan and loan documentation to minimize risk of environmental liability.

#### **CBA Due Diligence Guidelines:**

General Risk Assessment: In reviewing the loan, the lead bank should make a general assessment of the level of environmental risk, based on a title search, knowledge about the borrower's business (ie. general sectoral knowledge of degree of pollution intensity, etc.) If questions are raised in the initial assessment, an environmental audit should be undertaken.

Environmental Terms in the Commitment Letter: Specific environmental terms should be included in the commitment letter, including: requirements that an audit be performed and receipt of satisfactory results being a pre-condition of the loan.



Opinion of Legal Counsel: All matters related to environmental questions should be expressed by the borrower's legal counsel, related to the borrower's environmental compliance.

Phase One Audit: A checklist of a Phase One audit is provided. This includes site inspection; review of records and documents related to the borrower's activities and site use.

Review of Phase One Audit: Information should be provided in the audit report, including results summary, opinion of property status, and recommendation about the necessity of a Phase Two audit.

Phase Two Audit: A list should be provided of soil, air, water, emissions and other materials subject to laboratory testing.

Assessment and Impact of Audit Findings: The lender should review findings of Phase Two audit, to determine cost of environmental remediation; impact of clean-up costs on the pricing and terms of the loan, etc. Other banks, besides the lead bank, should have access to the Phase Two audit findings.

Third Party Indemnity: The lead bank should determine whether the borrower can provide an indemnity from a suitable third party to indemnify banks against liability.

Terms and Conditions of Loan Agreement: Terms should consider including the following:

- warranty that the property and its use is in compliance with all environmental laws; that all permits have been obtained; and that the borrower will continue regulatory compliance;
- warranty that the property is not causing or subject to environmental damage;
- warranty concerning current and future uses of the property;
- representation that past credit arrangements have not been altered because of environmental risk;

- covenant to take appropriate remedial measures in the event of environmental damages, and to notify participating banks of such damages;

- covenant to permit participating banks to enter onto the property to conduct an environmental inspection(s), and to take such measures as necessary to remedy environmental damages;

- covenant to have periodic environmental audits;

- covenant to indemnify participating banks against environmental liability occasioned by borrower's activities or use of the property;

- covenant, as necessary, for environmental insurance.

### The Netherlands

No specific legislation yet exists to address contaminated sites in the Netherlands, although the Second National Environment Plan advocates a more comprehensive approach to contaminated site management. The Netherlands contains thousands of waste sites that have been officially identified. Of those, approximately 1,600 are in need of environmental remediation.

This figure excludes active sites, in which industrial activity and waste problems continue (an estimated 93,000 additional sites).

In 1993, the Government began an ambitious plan to identify, list and prioritize clean-up action for contaminated soils for all industrial sites. Clean-up cost estimated are in the vicinity of 50 billion Dutch Guilders. Although the first approach to projected clean-up will be enforcement of the Polluter Pays Principle, the Government is looking at other options for clean-up, either under existing laws, or via new directives.

With regards to lender liability, draft legislation left open the door that mortgage holders could be held partially responsible for



clean-up costs of contaminated companies which go bankrupt. Proposed liability is, however, restricted to the profit margin because of increased property values resulting from the clean-up.

Site contamination laws are covered under several Dutch laws. The use and disposal of toxic substances is regulated through the *Substances Dangerous to the Environment Act* (1985).<sup>5</sup> The law regulates all substances, produced for any reason, and covers all the stages of the substances' life-cycle, from they are produced, to when they are finally disposed of.

The transport of dangerous substances is regulated under the *Dangerous Substances Act* (1963)<sup>5</sup>; controls on the dumping of toxic wastes are covered under the *Chemical Waste Materials Act* (1976)<sup>6</sup>. Other relevant legislation includes the *Nuisance Act* (1952), which covers risks of industrial accidents beyond the industrial site. Under the *Soil Protection Act*, provisions exist for strict liability, although the objective is primarily pollution prevention as opposed the clean-up of old sites.

In addition to statutes in existing laws, the Minister of the Environment has the authority to bring lawsuits for clean-up, in connection with old dump sites. To date, approximately 100 claims have been launched in this way. Polluters are jointly and severally liable.

In one case, the government is attempting to bring a suit against Shell for site contamination which took place in the 1950s. For the most part, however, actions have focused on contamination which has occurred after 1975.

Legislation has also been introduced, which will require companies to undertake soil investigation prior to transferring an industrial site to a new owner. If the site is found to be contaminated, either party must take responsibility for remediation. Concerns have been raised that this legislation will block the sale of contaminated lands, or that lenders in possession of the land during the transfer could

be liable.

With regards to future liability, the Dutch system is ahead of many others, insofar as polluters are increasingly under the umbrella of an environmental liability insurance scheme. The scheme, which does not operate for retrospective remediation claims, pools 48 insurers and six re-insurance companies from the Netherlands and abroad, with a gross premium income of DFI 2 million.

### **Germany**

German legislation related to contaminated sites falls under several legislative regimes. The main laws dealing with contaminated sites are the *Chemical Substances Law* (1982); *Waste Disposal Act*; *Act of the Prevention and Disposal of Waste*.

The worst environmental problems in Germany are related to soil and waste contamination, including orphaned industry sites, waste storage and other sites in the former East Germany. The number of contaminated sites is estimated to exceed 50,000, of which many are in need of urgent clean-up action.

Under the *Act for the Prevention and Disposal of Waste*, primary liability falls on the generator and disposer of wastes. The *Act* only applies to hazardous waste sites which came into existence after 1972. Government jurisdiction includes the authority to order the operator of a site to take whatever steps are deemed necessary to protect the public or the environment. This includes the ordering of a clean-up.

German law also has the authority to issue abatement orders against, or require a clean-up from the current owners of a contaminated site, as well as the creators of the hazard, including the polluters. Such liability is strict liability -- causation must be demonstrated, but not fault. Although several court cases have raised the question of the authority of regulators to order the clean-up of a site, thus far the status has not changed.



Under German tort law, provisions exist for strict liability related to contamination of water. The owner of a facility is liable if substances from the facility reach groundwaters. Owners can also be held liable for the cost of preventing ground-water pollution. The German government has announced plans to extend strict liability for water contamination, to soil and air pollution.

### **Transitional Economies**

Countries with economies in transition provide an interesting situation for commercial lenders. These countries have a similar history of industrialization as OECD countries, but under a different regulatory regime. In Eastern and Central Europe, severe pollution, site contamination and resource degradation have led to chronic environmental and health problems, and now border on the verge of an ecological catastrophe.

One of the key challenges to regulators, in devising new systems, is to strike a balance whereby clean-up action moves ahead in such a way that does not restrict or hinder desperately needed outside finance.

In looking at liability issues for past contamination, functionally, the polluter in most transitional economies has been the government. Although government regulations in most Eastern and Central European economies were comparable to OECD regulations, few laws were realistically enforceable, and most were not enforced. Therefore, the former governments can be seen as responsible as owners and operators, and therefore, under the Polluter Pays Principle, liable parties. However, attempts to adopt liability approaches of OECD are obviously likely to prove counter-productive.

As for clean-up being financed through a social fund, taxation is already high enough that this is unlikely to occur. Therefore, new approaches, which might include specific exemptions to lenders for past contamination, the leveraging of public funds through bilateral and other funding sources, and commitment by private sector lenders to provide some additional finance in return for third party exemptions, will be increasingly

explored by Eastern and Central European regulators.

1. The BBA argues that position of U.K. banks with regards security enforcement is worse than Continental banks. In the U.K., a lender enforces security by taking possession of a property, while in most Continental countries, banks never take possession, since the security is handled by courts.

2. The rule in *Rylands v. Fletcher (1866)* is seen by some as a potential clarification (ie. escape) from lender liability related to environmental damages. The rule is that «*the true rule of law is, that the person who for his own purposes brings into his lands and keeps there anything likely to do mischief if it escapes, must keep it in at his peril, and he does not, is prima facie answerable for all the damage which is the natural consequence of its escape.*» It is viewed in both Australian and UK law as being a prime «toxic tort» case.

3. See Sustainable Capital: The Effect of Environmental Liability in Canada on Borrowers, Lenders and Investors, Canadian Bankers' Association, 1991.

4. Wet Milieugevaarlijke Stoffen.

5. Wet Gevaarlijke Stoffen

6. Wet Chemische Afvalstoffen



**Section Two:**  
**Regulatory, Economic and Other**  
**Approaches to Environmental Management**

**Introduction**

Environmental regulations are as diverse as ecosystems are complex. Standards include the control of air and water pollution; the management of toxic and hazardous chemicals; clean-up requirements for contaminated sites; land use regulations; standards for transport of wastes; environmental emergency requirements for industries; mandatory labelling; the protection of wildlife; the conservation of fragile ecosystems such as coral reefs and wetlands, etc.

Most industrialized countries introduced pollution abatement regulations in the early 1970s. In the last twenty years, approaches to environmental problems have become broader in scope, more stringent in allowable emissions, and more flexible.

Today, environmental responses encompass various policy options, including: command-and-control regulations, such as "Best Available Technology" standards; the increased use of economic instruments, such as pollution charges and rebate systems; and the development of comprehensive approaches, to set the planks for sustainable development.

In addition to national approaches, increased emphasis continues on environmental management at the regional and international levels. A major of international efforts entails greater harmonization of approaches, and consolidation of standards.

One example: in July 1994, the European Commission introduced a draft Directive, intended to harmonize all air quality monitoring and air quality standards for member countries. The Directive covers 14 air pollutants, and proposes to establish maximum emission targets and timetables for polluters to meet targets.

A similar emphasis on regional environmental

**A July 1994 draft EC Directive proposes to harmonize air pollution standards for member states.**

management is reflected not only in other Directives under the EC, but in the implementation of the environmental provisions under in the North American Free Trade Agreement

(NAFTA), including the establishment in 1994 of the North American Environment Commission.

At the international level, some 180 international environmental agreements have been negotiated and signed by governments. Issued covered range from air pollution emission targets and regional agreements to protect oceans and coastal areas, to the control of waste shipments and climate change.

In similar manner to national approaches, international agreements continue to shift emphasis, from pollution remediation, to the introduction of anticipatory and preventive measures. In addition, international approaches continue to move from general objectives, to stricter standards: the March 1994 decision of the Basel Convention to ban immediately all international shipment of hazardous wastes from OECD to non-OECD countries is but one example.

Under the Basel Convention, work is also underway towards the development of an international Protocol on Liability and Compensation for hazardous wastes.

In light of enormous work underway involving environmental regulations, lenders can neither be expected to keep track of all developments, nor to act as a sort of secondary regulator, ensuring that borrowers understand and comply with relevant regulations. That is the mandate of regulators and industry, not lenders.

As part of prudent management practices, however, the financial services sector is tracking with greater scrutiny general trends in environmental management, for two reasons. First, lenders have an immediate interest --



because of lender liability issues -- in tracking regulations may directly affect their operations. These include liability regulations related to hazardous waste; contaminated land-site rules; and other areas in which liability may be incurred.

Second, lenders are becoming more interested in understanding general regulatory trends which affect borrowers. In so doing, lenders

**Positive effects of higher standards can include gains in innovation, efficiency, front-runner effects and spin-offs.**

are better positioned to weigh the extent to which a potential borrower is or can effectively and efficiently comply with regulations. Lenders are also better placed to weigh indirect risks of pollution-intensive

sector, as well as target high growth sectors by way of equity finance, or convention lending.

The following is intended to provide lenders with an overview of some issues related to environmental standards, and current issues.

### **Standards and Competition**

In the 1970s, environmental regulations concentrated on clean-up priorities, to tackle a long list of pollution, waste management issues, site remediation and other problems. In the mid-1970s, at the peak of capital investment in end-of-pipe technologies in OECD countries, as much as 15 percent of capital and operating costs were directed towards pollution abatement, in pollution-intensive sectors.

More recent estimates suggest that, for some pollution-intensive sectors like mining, forestry, chemicals and petro/agro-chemicals, oil refining, waste management, leather tanning, and other sectors, environmental compliance costs can remain in the vicinity of 15 percent of total costs. However, on average, total environmental compliance costs in most OECD countries are in the range of 1.75 to 2 percent of GDP.

**Jobs vs. Environment:** Since environmental regulations were introduced, opponents of higher standards have focused on a limited set of issues. In a similar manner to the current nicotine-addiction debate before the US Congress, some have argued that higher standards are not warranted, because of insufficient or inconclusive scientific evidence.

Even if the science is strong, as in the case of the health and environmental effects of lead in gasoline, others have -- since the early 1970s - - argued that higher standards erode competitiveness. In the 1970s, the fight against higher standards was presented in a choice between "Jobs vs. the Environment." Some argued that jobs would be lost, if industries were compelled to divert fixed and operating costs to stricter regulations.

The argument continues, although it is increasingly shifting from the national to international arena. The current trade-environment debate, for example, can be seen as a widening of the "Jobs vs Environment," whereby fears are expressed that an upwards harmonization in environmental product and process standards will undermine comparative advantage, and erode competitiveness.

During the NAFTA debate in 1993, for instance, detractors of the NAFTA-side accord on environmental standards argued that US-industries would migrate to Mexico, because of lower regulatory enforcement.

Generalizations either way about the economic/competitiveness effects of higher environmental standards are notoriously unsound. It is clear that short-term costs of higher standards can be high. It is also clear that costs are in part of reflection of scale: smaller firms, especially in developing countries, may bear higher costs because of stricter standards. It is for this reasons that a major focus of the Earth Summit, and in follow-up work, has centred on the twin issues of financial support and technology transfer for developing countries.



However, as Robert Repetto of the World Resources Institute argues, the competitiveness issue should also be seen in part as a "bluff" on the part of some industries, which oppose change.

It should be stressed this opposition to higher standards is increasingly becoming the exception rather than the rule. For example, in a similar manner as the *Business Council for Sustainable Development* advocates higher environmental standards for industries -- including industries in developing countries, because of the positive economic effects higher standards can bring. In the same vein, Repetto argues that higher standards are linked to stronger, not weaker economic performance:

*Japan and Germany, two countries with strict environment standards, have never proven to be uncompetitive in international trade; India and the former Soviet Union, despite weak and ineffective environmental standards, have been strikingly uncompetitive in world markets. Obviously, other factors are determining the market outcomes. Although there are some reported cases seeking out overseas production locations with weak environmental standards, by far the greatest amount of direct foreign investment is in countries that have high environmental standards.<sup>1</sup>*

Generalizations about economic impacts of standards need also take account of two quantifiably difficult issues -- scope of analysis, and time. Concerning scope, competition issues should not be viewed in a sector-specific context. For example, if an industry has lower or non-existent pollution emission standards for toxic and hazardous wastes, the overall competition and other costs -- in terms of contaminated water, increased health costs, etc. -- will outweigh whatever marginal savings are incurred from lower standards.

The issues of scope is closely aligned to the question of time-horizons. One of the most important assumptions of sustainable development is time: current environmental management practices must be viewed in a

time-horizon that includes both today, and future generations.

### Positive Effects

Although most assumptions focus on the negative effects of higher standards, in terms of sunk costs, more recent studies have pointed to positive economic/competition effects.

A 1993 study by Stephen Meyer of the Massachusetts Institute of Technology (MIT) showed, for example, a positive correlation between environmental investment and economic performance. The study, which assessed economic performance in US states over a 20 year period, put forward the following conclusions:

(i) No negative effects could be detected between economic growth and prosperity and the level of environmental regulations. The report stated that "It simply was not true that states with stronger environmental standards fared less well than those with weaker environmental standards. While this was unexpected, it was not unbelievable."

(ii) The discovery of a surprising, consistent and systematic positive correlation between stronger state environmentalism and stronger economic performance.

Although drawing conclusions from selected reports is premature (since higher standards and performance are a function of a range of welfare choices), it is equally true that assuming that higher environmental regulations necessarily dampens competitiveness is often invalid.

According to a 1993 OECD workshop entitled *Environmental Policies and Industrial Competitiveness*, environmental regulations can have a positive impact on industrial competitiveness, in several ways.

These include the yielding of:

- (i) innovation advantages;
- (ii) efficiency advantages;
- (iii) front-runner advantages; and



(iv) spin-off activity advantages.

As noted above, one of the most often-cited examples of a win-win scenario between economic and environmental benefits from stricter regulations

is the much stricter air pollution regulations imposed by Japan in the early 1970s, which contributed to efficiency gains in industry, lower pollution, reduced energy and resources inputs, and a stronger competitive position of Japanese industry in the 1980s.

**Some call fears of negative competition effects of higher standards a bluff.**

It is important to note that the OECD workshop also pointed to an important link between the capacity to benefit from higher environmental standards, and scale: transnational corporations and larger companies are usually better equipped to adapt to higher standards.

Therefore, for smaller-scale companies, the cost of environmental compliance can be difficult. This has been a long-standing concern of lenders in dealing with various aspects of small-scale clients.

### **Environmental Principles**

Before outlining some trends in regulations and management approaches, it is useful to highlight some key principles and concepts. They include:

The Polluter Pays Principle (PPP) is one of the key principles adopted by banks, in defence against lender liability. Adopted by OECD Ministers in 1972, it is intended to place responsibility for paying the cost of pollution on the enterprise which has caused, or is causing the pollution.

The PPP assumes that environmental costs should be "internalized" by the polluter. After being largely ignored, the PPP has gained in profile in recent years, with increased emphasis on the so-called internalization of ecological

externalities.

In addition to the PPP, numerous other principles exist, and are gaining in acceptance within different legal regimes. (For an overview, see *Concepts and Principles in International Environmental Law*, UNEP Environment and Trade Series, Number Two, 1994.) Other principles of interest to lenders include:

Sustainable Development: the 1987 Brundtland Commission report "Our Common Future" defined sustainable development as "development that meets the needs of the present without compromising the ability of future generations to meet their now needs."

Sorting out the operational consequences of the term was the focus of the 1992 Earth Summit. The term is widely used in most industry codes of conduct, as well as legal agreements as diverse as the Final Act of the GATT Uruguay Round and the Convention on Biological Diversity. Despite, or perhaps because of the unclarity of the term, it has gained enormous political and legal backing. The concept of sustainable development is also forming the basis of various "soft laws" in environmental management.

The Prevention or Precautionary Principle recognizes the existence of scientific uncertainty concerning environmental risk. It assumes that when potential risk is identified by science, but not confirmed because of an absence of data or empirical testing, the burden of proof should rest on avoiding the risk, in order to prevent potentially catastrophic damages.

The Precautionary Principle is contained in the decisions of UNCED, as well as a growing number of recent international environmental agreements. It is also contained in the 1992 *Statement by Banks on the Environment and Sustainable Development*.

The Efficiency/Effectiveness Principle: recognizes that cost-effectiveness must be an important part of environmental management.



This principle is reflected in the *Best Available Technology Not Entailing Excessive Cost (BATNEEC)* approach, whereby higher environmental standards are seen within a broader scope of capacity to pay. This Principle is particularly important to developing countries, which face the prospect of higher international environmental standards.

The Subsidiarity Principle: aims at making the lowest level of government or relevant authority responsible for environmental decisions wherever possible, without leaving excessive residual externalities.

### **Environmental Risk Assessment**

The process by which environmental standards are established is complex. Standards are never static, but are continuously updated, in response to such factors as the discovery or clarification of new risks determined by scientific testing; or public pressure for higher standards in response to known risks.

Given the complexity of standards development, it is useful for lenders and borrowers to have a broad understanding of how standards come about. (For a more detailed account of this process, please see Science, Risk Assessment and Environmental Policy, UNEP Series on Environment and Trade, Number 5, 1994.)

A useful insight into the standards-setting process is found in the risk categories outlined in the European Commission's Directive 93/67/EEC, related to the toxicology of a single species. The Directive divides risk identification into the following categories:

*Hazard Identification*: the "identification of the adverse effects which a substance has an inherent capacity to cause."

*Dose: Response Assessment*: Although the categorization under this assessment is complex, the EC advocates two levels: for humans, the No Observed Adverse Effect Level (NOAEL); for the environment, No

Observed Adverse Effect Concentration (NOAEC). If a clear assessment cannot be reached from effect levels or effect concentrations, then other benchmark are recommended, including for example the LD50 (Lethal Dose) model.

*Exposure Assessment*, whereby the likely exposure of susceptible environmental or health components is assessed, using such information as the effects of an accidental release of toxics, the conventional use of products such as solvents, pesticides or paints. This information is used to derive a Predicted Exposure Concentration.

*Risk Characterization*: This entails a conclusion or decision regarding the severity of the likely effects. There are various matrices involved, but both the EC and US Environmental Protection Agency (see Framework for Ecological Risk Assessment guidelines) suggest that, at the end of the day, judgements are required to weigh the evidence of known and likely risk.

### **Risk Management**

This is the final, and from a regulatory approach, most important stage, whereby risks are ideally linked to regulatory responses. That is, the higher the risk, the more stringent the response.

Although this is often the case, particularly for health-related risks stemming from toxic or hazardous substances, often variables are also included in standards. These include non-scientific variables, such as costs, public opposition to, or support of response options (such as local opposition to the siting of waste incineration treatment facilities, or public support for tougher industry regulations, etc.)

There are numerous ways in which risks are managed. These include:

*Ambient Quality Standards*: The most common approach to pollution abatement regulations is to establish a maximum threshold for pollution. Industries must perform below a maximum



allowable pollution contamination level, sometimes established in parts per million, or parts per billion. Under ambient quality approaches, regulators allow flexibility in the industry choice of technologies. In practice, however, standards may be so stringent that they require a specific technology application.

*Technology-Based Standards:* Requires polluters to install specified abatement control technology, such as catalytic converters for vehicles, sulphur dioxide scrubbers for utility plants. Regulations do not specify technology-specific requirements, but factory-specific performance standards, which can usually be met through "best available technologies."

**The use of market-based instruments has doubled and almost tripled in many countries.**

What can be characterized as the second generation of environmental standards and regulations began to emerge in the 1980s, to complement end-of-pipe regulations. Regulations shifted from clean-up, to pollution prevention.

*Comprehensive Approaches:* As environmental regulations become more complex, a number of countries and bodies have recognized the need to consolidate, simplify regulations. One example is the July 1994 EC draft Directive intended to require common air quality monitoring standards and pollution limits for member states.

It is part of an EC review process, intended to review and simplify regulations for air and water quality. Under the draft Directive, up to 14 air pollutants would be covered, including sulphur dioxides and nitrogen, ground-level ozone, and carbon monoxide. The draft Directive consists of common reporting standards; setting of clear pollution-level limits, with a 10-15 year schedule for implementation.

The EC initiative is one of example of growing efforts among regulators to simplify, avoid

duplication, and build a broader, and more comprehensive approach to environmental regulations. Several countries, including Canada's *Green Plan*, or the *Second National Environmental Policy Plan* of the Netherlands, have introduced comprehensive environmental management plans, which take account of resource use, pollution generation, land-use and other issues within a global context of sustainability. The Second Dutch National Plan contains clear recommendations for across-the-board pollution reduction targets.

An important part of comprehensive approaches is the shift from a near exclusive reliance on command-and-control regulations, to increased use of economic instruments.

### **Market-Based Instruments**

According to the OECD, economic instruments have doubled in the last five years in most industrialized countries.

The attraction of market-based instruments is considerable. While command-and-control regulations remain essential in controlling or banning severe environmental or health effects (such as toxic or hazardous chemicals), there is broad consensus that regulations are not always the sole, or best means of tackling environmental problems.

Regulations may, for example, be insensitive to installation and other abatement equipment costs. Technology standards, if too strict or narrow, may hinder industry innovation. More crucially, pollution-abatement technology approaches focus on cleaning-up pollution after it takes place, through end-of-pipe abatement technologies.

**Potential Benefits:** Although this focus has been successful in reducing several important air and water pollution emissions, end-of-pipe technologies may miss important "upstream" environmental objectives. These upstream objectives include reducing resource, energy and other per unit inputs. End-of-pipe regulations similarly may miss downstream opportunities, such as resource re-use and



recycling.

By contrast, market-based instruments may help build assurance that individual polluters are able to reduce pollution to the point where the marginal costs of controls are equal to the costs of non-compliance (through such regulatory devices as fines, penalties, etc.).

Other potential benefits include: they offer relatively rapid pollution abatement, in a least or reduced-cost manner; they promise to build systematic incentives to economic actors, whereby good environmental performance is rewarded with incentives, and bad environmental actors face higher pollution taxes or other instruments.

In this way, they are important in promoting behavioral changes towards more sustainable consumption.

From a government perspective, and to the suspicion of many in industry, market-based instruments also offer new revenue streams.

**Possible Gaps:** Although a great deal of attention has been placed on economic-instruments, many questions remain unanswered. The most important is the gap in empirical evidence about actual performance of instruments. Other questions include the appropriateness of introducing charges and taxes to inelastic or price insensitive prices; the effects of economic instruments on income distribution; public opposition to the introduction to any new taxes; and industry concerns about the competition effects of introducing new pollution taxes and other charges, only at the national level.

This latter concern was, for example, one of the key factors in the dismantling of the original 1993 Clinton energy tax.

### **Definitions**

*Emission Charges:* Tax or other charges on the discharge of pollutants in the air, water or soil, as well as the generation of noise pollution. Charges are calculated according to the

quantity, as well as the severity/toxicity of the pollutant;

*Product Charges:* Charges levied on products that are harmful to the environment, either during the production process, when the products are consumed or used, or when the product is disposed of;

*Tax Differentiation:* Positive or negative product charges, intended to encourage or discourage the consumption pattern of particular goods and services associated with environmental effects;

*Marketable Permits:* are environmental quotas, allowances, or ceilings on pollution levels that, once initially allocated by an appropriate authority, can be traded in the marketplace, by auction, direct sale, or other means;

*Liability Insurance:* refers to the creation of a market in which the risks of bearing liability for uncertain environmental damages are transferred or partly covered by the insurance sector;

*Deposit-Refund Systems:* Perhaps the most common and oldest of market-based instruments, a deposit is paid by consumers on a potentially polluting product. When pollution is avoided because the product container is returned, the deposit is refunded, thereby creating an incentive for recycling or product container reuse.

**Product Charges:** One of the most common instruments in practice is charges on products which have environmental effects. Such charges cover such products as automobile tires, batteries, lubricant oils, pesticides, feedstocks, plastic bags, non-returnable beverage containers, and others.

The most pervasive use of product charges relates to taxes on petroleum products. Tax rates vary depending on country and product: in most cases, charge rates have been set too low to have any decisive influence on consumer behavior. Industrial users of heavy fuel oil products are subject to excise taxes in



Australia, Austria, the Netherlands, New Zealand, Norway, Spain, Sweden, Switzerland and the United Kingdom. Natural gas is subject to a resource tax in Australia.

In countries which have in place value-added tax systems (VAT), household consumption of light fuel oil and natural gas is often subject to charges. (The United Kingdom and Luxembourg are the only OECD countries which provide charge exemptions to both product categories).

An area of growing interest, and enormous longer-term economic implications, is consideration of charges to address carbon dioxide emissions. In Norway, the Green Tax Commission -- following an in-depth review of the design and performance of existing environmental taxes -- recommended that the current taxes covering sulphur dioxide emissions continue, and that fuels such as coal and oil have differential tax rates, based on sulphur content.

**Pollution Charges:** The most widely-used pollution charge is used for waste disposal. Denmark and Belgium levy charges on solid waste disposal: the rate of the Belgium tax is weighted, according to the type of waste, toxicity, types of treatment available, and other factors.

In 1988, the Dutch government replaced individual charges levied on the storage, treatment, and disposal of some chemical wastes, with a general product charge on all fuels. In 1992, Denmark increased its charge on solid wastes, from 40 to 130 DK per metric tonne.

**Tradeable Emissions:** Tradeable permits are of particular interest, as governments weigh different options to address greenhouse gas emissions. As no end-of-pipe approaches exist to reduce carbon emissions, economic instruments represent among the only viable option, from a cost-effectiveness perspective.

Tradeable emissions were introduced under the US *Clean Air Act*, and remain an important

tool in reducing sulphur dioxide air emissions. Under the 1992 amendments to the Act, a national ceiling of 8.95 million tonnes of allowable emissions is set, and a two-staged system is applied to utilities and other fixed emission sources. Under the scheme, permits are introduced nation-wide.

Once permits are allocated, if a plant reduces emissions below its prescribed allowance, it can "sell" excess permits to plants unable to meet targets. Accordingly, plants have an incentive to exceed minimum targets, while overall environmental quality is achieved in a more cost-effective and flexible way. Estimated savings from the tradeable emissions scheme in the US alone is \$1 billion per year.

In March, 1993, the Chicago Board of Trade began its first public auction of permits.

### **Green Labels**

The purpose of "eco-labelling" schemes is twofold: to guide consumers in their choice of environmentally-less damaging products; and to stimulate innovation and competition in the industrial sector in the development, design and production of goods, by taking into account environmental considerations as a part of mainstream marketing considerations.

In the 1980s, a large number of labels were introduced at the company and industry levels. In response to confusion about product claims, as well as to introduce a new component in an overall environmental management system, approximately 25 governments have introduced, or are introducing, national voluntary eco-labelling schemes.

Although product categories, criteria selection and other considerations in eco-labelling schemes differ widely, the general purpose is similar: to provide consumers with a government-endorsed product label, and to reward producers which follow environmentally-sound management/production practices. The label is intended to assure consumers that the product identified has undergone testing and certification by a



government-endorsed agency, and is considered to be relatively more "environmentally friendly" than similar products in the same category.

Response to eco-labelling schemes remains varied, and has for the most part fallen below expectations. In the case, for example, of paper products and detergents, the introduction of the Nordic Council's White Swan scheme has clearly demonstrated strong public preference for labelled products: the largest fine paper trading company in Norway, for instance, increased its share of eco-labelled paper products sold in Norway from 5 to 50 percent in one year.

In the case of Singapore's Green Label scheme, introduced in 1992, surveys of 18 companies that sell labelled products show a mixed consumer response: seven of the companies reported increased sales; nine companies reported no change in sales, and two reported decreased sales.

With regards the selection of product categories, the goal of the label is to reduce environmental damages associated with a product category.<sup>2</sup> This implies that there are a number of similar products within a category, and that some of those products are relatively more environmentally benign than others.

However, when all products within a category may be considered to be harmful to the environment, such as certain household chemicals, then the entire product category may be excluded for a labelling scheme.

This difficulty with product category selection is reflected in the differences between national eco-labelling schemes: the German Blue Angel schemes (established 1977), for example, contains 75 product categories, while Canada Environmental Choice Scheme (established 1988) contains 25 product categories.

Concerning the scope of the assessment criteria, the objective of the label is to assess the environmental impact of the product's

entire life-cycle. Criteria requirements are over and above national requirements related to compliance with national quality, health, performance, safety and other standards.

Some of the environmental considerations assessed in eco-labelling schemes include the degree of air, freshwater or other pollution associated with the manufacturing of the product; hazardous or toxic waste profiles; energy efficiency, noise pollution, product re-use, recyclability and biodegradability, to name but a few.

**In March 1993, the Chicago Board of Trade began its first public trading of tradeable emission**

There are two broad types of labels to reflect these considerations: a single label criteria, which provides information on one specific aspect of the product, such as its biodegradability, or the absence of ozone-destroying CFCs.

The second type of label is, in theory, more comprehensive, and is intended to be awarded to products which demonstrate a lower or relatively benign "cradle-to-grave" environmental impact. In practice, however, life-cycle analysis remains an extremely complex, costly and uncertain analytic tool.

Although some inputs, such as energy, are relatively easy to quantify, in the case of paper products, questions remain about how timber resource inputs can quantify differences between sustainably managed virgin forests, or recycled paper content.

Questions of life-cycle assessment become even more complex, when different environmental values associated with local and global societal choices are included in the product label.

These issues of product categories and assessment criteria, have raised a number of questions regarding the relationship between international trade and eco-labelling. Concerns have been raised that product category choices,



and the process by which different national eco-labels are mutually certified, are complex and unclear, and may constitute direct or indirect barriers to trade in goods.

In response, a number of international organizations have been addressing the trade aspects of eco-labelling schemes. Since 1991, for example, the GATT's working group on trade and environment has been looking at trade aspects of eco-labelling -- the World Trade Organization (WTO) Committee on Trade and Environment will continue assessing eco-labels, particularly in relation the Uruguay Round Final Agreement on Technical Barriers to Trade.

The **German "Blue Angel"** scheme, introduced in 1977, remains among the oldest eco-labelling schemes, as well as the broadest in terms of product categories and products labelled. An (1993) estimated 4,000 products are covered in this programme, under 75 product categories.

**Some 25 national ecolabelling schemes are in operation, and more being developed.**

The German label was introduced by the German Federal Minister and the Ministers for Environmental Protection of the Federal States, and is administered by the Federal Environment Agency, the Environmental Label Jury and the Institute for Quality Assurance and Labelling. Under the Blue Angel scheme, a product's life cycle goes under examination, and emphasizes one aspect of the product, depending on the product category. The programme is not a single criteria procedure, since the product evaluation incorporates quality and safety standards in relation to the various effects on air, water and soil quality, as well as the effects on energy and natural resource consumption.

Canada's **Environmental Choice** was established in 1988, and is administered by Environment Canada. Nineteen guidelines have been established to cover 34 product

categories (1993), on close to 700 product lines. Under this scheme, product are expected to fulfill the following broad criteria:

(a) Product categories must offer the potential for high, positive environmental impact. Specifically, a category must have the potential to minimize the release of harmful pollutants to the ecosystem, maximize waste reduction, energy conservation, renewable resource conservation or non-renewable resource conservation.

(b) The entire life-cycle of the product should be considered for establishing criteria, even though the guidelines may only cover a few of the product category's environmental aspects.

(c) The product category should be marketable, and the drafting of the criteria should be a feasible process for that product category.

(d) Products have to comply with quality and safety standards.

(e) Product categories will not normally include those products which are covered in other regulations, such as the Montreal Protocol, or by national legislation related to health and safety standards.

The **Nordic Council of Ministers** (Sweden, Finland, Iceland and Norway) introduced the White Swan label in 1989, and is administered by national agencies of the four Nordic country members. In April 1993, criteria was established for 14 product categories, and criteria is being developed for six others. More than 200 products are current covered under the White Swan scheme: the most common product group is "fine paper for printing, writing and copying."

The procedure for granting the White Swan label includes:

(a) National agencies receive suggestions concerning product categories. Only products that have an impact on the market and create considerable environmental problems are considered.



(b) Criteria proposed by an independent panel of experts are sent for review, and criteria are adopted by consensus by the four countries.

(c) National bodies issue licenses for the use of the label. Like some other national schemes, White Swan has an application fee of approximately US\$1,450, together with an on-going fee which corresponds to 0.4 percent of the product's turnover.

**India's Ecomark** scheme was introduced in 1991, and is administered by two committees: the Steering Committee, comprised of the Secretary to the Government, and the Ministry of the Environment and Forests, as well as representatives of different sectors; and the Technical Committee, comprised of the Central Pollution Control Board, private sector organizations, experts, etc.

By 1993, 16 product categories had been developed, or were being developed. They include toilet soaps, detergents, plastic products, paper, architectural paints, lubricating oils, tea, coffee, edible oil, beverages, infant foods and processed fruits.

The **Green Label scheme of Singapore** was introduced in 1992, and is administered by the Secretariat of the Waste Minimization Department, and an Advisory Committee. In 1993, five product groups were approved. They are: Office Automation Paper; Printing Paper; Hygiene paper; Stationary Paper; and Carbon-zinc batteries; compact fluorescent lamps; and alkaline batteries. In most cases, the Green Label relies on single-label criteria,

Other eco-labelling schemes include Ecomark of Japan (1989) the Environmental Choice of New Zealand (1992), and Eco-Logo of the Republic of Korea (1992). Several other schemes are in various stages of development: these include the EU Scheme, under the European Union; the Green Seal & Green Cross in the US; and the examination of national schemes by the governments of Thailand, Brazil, Colombia, Malaysia and the ASEAN countries.

## **Selected National Strategies**

**Japan** forms an instructive case in the economic value of command-and-control regulations, and is often used by economists (eg. Michael Porter at Harvard) as an example of how stringent home-based standards not only do not inhibit growth, but actually promote it.

The basic law for *Environmental Pollution Control* in Japan was enacted in 1967. It defines environmental pollution in terms of damages to health or the living environment caused by pollution of the air, water, or soil as a result of industrial or other activities. This law has subsequently been updated on a number of occasions: in 1969, under the *Law for Pollution-Related Health Relief*; in 1972 under the *Law for Pollution-Related No-Fault Liability*, seen as an early attempt to implement the Polluter Pays Principle; and the 1973 *Pollution-Related Health Damage Compensation Law*.

These laws establish a legal framework for ambient and technology standards, on a strict basis. Regulatory emphasis has been on "best attainable technology" as opposed to best available technology: this is seen as a precursor to current BATNEEC initiatives.

Costs of adopting this approach seems to have contributed to economic growth: environmental costs, in the words of one Japanese commentator, seem to have "worked to expand the economy in the form of effective demand creation and had an income effect, not a price effect in terms of an increase in wholesale prices." During the 1970s, 5.2 trillion yen was spent on anti-pollution facilities. During that same period, economic growth was in the vicinity of 4 percent per annum. The shift away from pollutant-intensive industries -- especially in the automobile, oil-based energy sector, and in the petrochemicals industry -- had a number of positive advantages, including:

- increased exports of new cleaner technologies to other industrialized countries.



- increased sales of cleaner automobiles and other transport systems

- a strongly innovative domestic market, forced to rapidly introduce cleaner, and more efficient technologies.

**Australia:** Environmental jurisdiction rests mainly with the States. The federal government has jurisdiction in a number of areas, including Environmental Impact Assessments, regulations governing hazardous wastes; dumping into coastal waters; and oil spillage into the marine environment.

Other areas also fall under federal jurisdiction. These include the *Ozone Protection Act*, the *Industrial Chemicals Act*, *Resources Assessment Commission Act*, and the *Agricultural and Veterinary Chemicals Act*.

Australia has taken a leading stand on atmospheric change, by drawing up a national strategy for ozone layer protection and a plan to reduce greenhouse emissions by 20%. These initiatives, and others in forest management, wilderness designation, the conservation of biodiversity, land and water rehabilitation, the regulation of hazardous wastes and chemicals and energy and mining policies are to be brought together under a comprehensive strategy for sustainable development.

**United Kingdom:** UK regulations connected with industrial impacts on the environment date to the *Public Health Act* of 1848. Common law has followed this general approach of public nuisance, as reflected in *Rylands vs. Fletcher*. U.K. legislation on pollution has seen two major amendments.

(i) The *Control of Pollution Act* (1974) introduced a variety of new controls over the collection and disposal of waste, and is still in force.

(ii) The *Environmental Protection Act* 1990 (EPA) which covers a broad spectrum of environmental concerns. It brought into force a system of "integrated pollution control" (IPC), designed to apply to all processes in

England and Wales prescribed by the Secretary of State. Subsequently, the *Prescribed Processes and Substances* legislation which appeared in 1991, (amended also in 1992) list processes to which the earlier act applies. Additional legislation affecting water resources was also added under the *Water Resources Act* 1991.

**Germany:** Since 1983, Germany, has developed one of the world's most stringent air pollution regulations. And despite difficulties in implementation, it leads the way also in packaging and recycling requirements, and in may process standards. It also exceeds EU standards for vehicle emissions.

Regulatory responsibility lies mainly with the separate States, although the central government has passed one of the most comprehensive pollution industry retrofit programmes, in which an estimated 21 billion DM was forecast to be spent on power plant regulation over the last ten years. Best available technology (BAT) is mandatory in many cases, but time lagging prevents excessive expenditure where it would otherwise occur. Strict liability for pollution from stationary sources is already in place in Germany.

As a percentage of GNP, Germany continues to be among the leaders in spending on environmental protection: 1.74 percent in 1991. In the chemicals sectors, estimates suggest spending in the vicinity of 2.5 percent; in the energy sector, 2.3 percent. In terms of German exports which require high environmental protection, exports are higher in absolute value than those of any other country, forming some 12 percent of world market share.

In end-of-pipe abatement technologies, between 1985 and 1988, more than 30 percent of all patents applied for in more than one country originated in Germany.

**Canada:** The most comprehensive legislation at the federal level is the *Green Plan*. Key regulations within this document included the



1991 *Health and Environment Action Plan*, which includes a *Drinking Water Safety Act*, a programme to investigate air pollution effects, including climate change and acid rain, and a waste management study to assess health requirements.

During the course of the decade, the Canadian government plans to introduce regulations for all toxic substances, including commercial chemicals and effluent, wastes and emissions from major industrial sectors. Regulations for smelters, petroleum refineries, chemical production facilities, power generation stations, metal finishing, textiles, mines and steel plants were envisaged to be in place by 1994.

Comprehensive plans are underway to more broadly consider market-based instruments. Recently, the Canadian Deputy Prime Minister reiterated Canada's commitment to a 20 percent reduction in carbon dioxide emissions.

The Canadian environmental sector is estimated to be between \$US 8 - 10 billion, with growth of about 7 percent per year. In some sectors, growth forecasts are approximately 20 percent. The Canadian pollution control equipment market (excluding services) is estimated to total \$US 1.4 billion, an increase of 43 percent since 1986.

Municipal expenditures on water, wastewater, and solid waste control, and private industrial expenditures (pulp and paper, petroleum and metals) intended to meet new environmental regulations will constitute the bulk of growth in Canadian environmental activity.

**The Netherlands:** The Dutch National Environmental Action Plan (NEAP) is probably the most comprehensive environmental legislation currently active in the OECD. The NEAP not only provides for waste management, recycling content, emissions standards, and health regulations, it also acts towards encouraging business to invest in cleaner production.

The Dutch experience underlines the benefits of institutionalizing dialogue between industry

and regulators, via the creation of a special programme -- the PRISMA programme -- which is backed up by specific targets. Most industrialists quickly realize that it is better to agree than to watch tougher legislation put in motion. As a result, the combined effects of the NEAP have seen a 60-70 percent reduction of Dutch pollution.

The volume of municipal waste in Holland has, for example, declined in 1992 for the first time since 1945. The follow-up NEEP II has recently been completed, and sets out more stringent pollution and natural resource reduction targets.

### United States.

The US domestic environmental sector is extremely large, and expected to increase significantly in specific markets. Recycled plastics have been projected as reaching 43 percent of all disposable plastic by 2002. The use of landfill sites for disposal is expected to decrease from 96 percent today to 36 percent by 2002. Waste-to-energy markets is forecast to undergo extensive growth.

The U.S. solid waste market is estimated at \$20 billion per year, and is forecast to double by the year 2000. Municipal wastewater capital expenditures are projected to reach \$2.8 billion in 1995. The EPA estimates that cleaning the nation's surface waters by 2000 might cost upwards of \$110 billion, with tertiary water treatment systems markets rising by 7 percent per annum. In 1992, demand for US air pollution control technologies was estimated to be (in US\$ millions);

mechanical collectors.....	\$25m
solvent recovery.....	\$35m
wet scrubbers.....	\$40m
flue-gas desulfurization.....	\$160m
electrostatic precipitators.....	\$100m
oxidization systems.....	\$135m
fabric filters.....	\$195m

In February 1994, although discretionary spending at the federal level was reduced by \$7.7 billion, estimated increases in environmental expenditures was 5 percent,



according to the Wilderness Society. Budget allocation for watershed restoration increased by 20 percent.

The EPA will also provide states with \$1.6 billion for water pollution control improvements, and \$1 billion for energy efficiency and renewable energy research.

**Ghana:** During the 1980's industries in Ghana underwent an almost two-fold growth. The number of factories doubled, with the preponderance (67%) operating in the vicinity of the capital, Accra.

Concomitantly, pollution levels also began to rise: arsenic, for example, began to appear in food items and in hair samples, and to be implicated in "black spot disease" a form of skin cancer at two of the worst sites. Scrap metals are proliferating, and by the late 1980's over 300,000 tonnes of aluminum dross, scraps, slag, potlinings and offcuts were already identified. As plastics manufacture took off, open burnings increased, and groundwater wastes associated with a wide variety of agricultural, chemical, textile, paper and petrochemical industries assumed alarming proportions.

The Government of Ghana set up a national Think Tank on Environmental Issues in March 1988 to draw up a working programme of action on the environment. This was to be embodied in its second structural adjustment programme, and the tied in closely with the National Environmental Action Plan drawn up in conjunction with the World Bank.

This action plan deals with issues such as:

- Land management
- Forestry and Wildlife
- Water management
- Marine and coastal ecosystems
- Mining, industry and Hazardous Chemicals

**Egypt:** Recently, the Government endorsed the *Environmental Protection Law No. 4/1994*, which provides for the first time in Egypt,

legal protection to environmental components such as air, water, soils and seas, as well as natural reserves.

The law also provides for the prosecution and punishment of transgressors. Relevant enforcement legislation is expected in six months time, with the possibility of an Environmental Police Force not being ruled out. Pollution caps, rules for EA's and for the impact of new private and public projects are also being drawn up.

**Bolivia:** Industrialists have recently had to bow to environmental pressure when the lower house of parliament passed the controversial Forestry Law on February 8, 1994. The 100 article text calls for sustainable forestry, in specified zones, with land being leased out on a 40 year basis.

The law also establishes usage rights payments between 1.1 and 2.6 dollars per hectare, depending on zones, which are classed as critical, limited, normal and higher potential. Such legislation forms a model for other countries in the region, and across the South to study.

**Vietnam:** On December 29, 1993 Vietnam passed its first environmental law. The focus of the legislation is on preventing further degradation of the Vietnamese environment, which has been seriously degraded by years of conflict. Deforestation and soil degradation, two current pressing issues are addressed

**Hazardous Wastes Regulations in Non-OECD countries:** Regulations concerning hazardous wastes have increased in developing and transitional economy countries. In Poland, for example, legislation was recently enacted to protect against trade in hazardous and toxic wastes. In August 1993, the Polish Ministry of Environmental Protection, Natural Resources and Forestry issued a list of 106 hazardous wastes forbidden for import and export, of which 10 categories of hazardous products such as withdrawn pesticides, are included.

In Estonia and the Philippines, legislation has



been enacted since 1990. Concerns centre on waste definition, import and export of wastes, the transit of wastes through national territory, the duty to re-import rejected waste shipments, and the illegal traffic of hazardous wastes.

In the Philippines, the Philippine Republic Act 6969, of 23rd July 1990, is an Act to Control toxic substances and hazardous and nuclear wastes, providing penalties for violations thereof, and for other purposes. In Estonia, the Decree of the Government of the Republic of Estonia, 34, About the order of import, export and other kinds of transportation of hazardous wastes, amended with the Governmental Decree No. 365, 30 December, 1992, provides for measures on all mentioned topics, and also provides a loose definition for wastes.

Since the 1990's, similar legislation related to the definition, use, and handling of wastes has been passed in Argentina, Cameroun, Djibouti, Gambia, India, Nicaragua, and Nigeria.

1. See Robert Repetto, Trade and Sustainable Development, UNEP Environment and Trade Series, Number One, 1994.

2. For more information on product category, criteria selection and international trade implications, see Veena Jha, René Vossenaar and Simonetta Zarrilli, Ecolabelling and International Trade, UNCTAD Discussion Papers, October 1993.

## Section Three International Standards and Agreements

### International Environmental Standards

Like health, worker safety and other standards, most environmental standards are established

**Most large companies have developed internal environmental policies. In addition, some 35 industry green codes of conduct now exist.**

at the national level. However, in recent years, increased emphasis has been placed on developing international responses to a growing list of problems at the transboundary, regional and global levels.

International standards generally can be divided thus: (i) voluntary guidelines, codes of conduct and standards; and (ii) international environmental agreements.

A 1992 UN survey of transnational corporations showed that the majority of them -- over 80 percent -- had adopted a company statement and internal guidelines for environmental management. In addition, more than 35 voluntary industry codes of conduct and guidelines now exist. Guidelines range from sector-specific codes of conduct, covering the chemicals or agro-chemicals or transportation sectors, to more general, industry-wide commitments.

An example of the former is the *Responsible Care* programme of the chemicals industry. An example of the latter: the *ICC's Business Charter for Sustainable Development*.

Although not legally-binding, codes provide lenders with a good overview of best environmental management practices in different sectors. In turn, such information can be useful in helping lenders clarify necessary due diligence procedures for different sectors. And finally, such codes help identify to lenders companies which pursue environmental responsibility as part of an overall corporate commitment.

The following is intended to provide examples of voluntary codes, as well as updates of issues related to international standards, and international environmental law.

### **Voluntary Codes:**

#### *(1) Code of Ethics on International Trade in Chemicals: The London Guidelines:*

In April 1994, international agreement was reached to adopt a *Code of Ethics* for international trade in chemicals. Although non-binding, the Code is addressed to industry, and covers the production and management of chemicals in international trade, taking into account their life-cycle (or cradle-to-grave characteristics).

The *Code* includes provisions on the minimization of health and environmental risks from chemicals, including chemicals packaging and labelling, testing, risk assessment and quality assurance. Work continues towards strengthening this code, through the international negotiation of a legal agreement on the management of chemicals. Already, the Danish Government has proposed a ban of all dangerous chemical shipments, from OECD to non-OECD countries.

An international agreement on chemicals will be of considerable importance to the chemicals and related sectors.

#### *(2) The Ceres Principles*

In February 1994, General Motors signed the *Ceres Principles*, because, according to GM CEO John F. Smith, the company "wanted to show that economic growth, technology, and environmental quality can be compatible".

Given that GM has often been seen in the frontlines of industry hesitation regarding higher environmental regulations, the endorsement by GM underlines that fact that many of the objectives in the CERES Principles coincide with mainstream business goals. To date, approximately 70 companies internationally have endorsed the Statement,



which follows:

(i) Protection of the Biosphere: We will minimize and strive to eliminate the release of any pollutant that may cause environmental damage to the air, water, or earth or its inhabitants. We will safeguard habitats in rivers, lakes, wetlands, coastal zones and oceans and will minimize contributing to the greenhouse effect, depletion of the ozone layer, acid rain, or smog.

(ii) Sustainable Use of Natural Resources: We will make sustainable use of renewable natural resources, such as water, soils and forests. We will conserve non-renewable natural resources through efficient use and careful planning. We will protect wildlife habitat, open spaces and wilderness, while preserving biodiversity.

(iii) Reduction and Disposal of Waste: We will minimize the creation of waste, especially hazardous waste, and wherever possible recycle materials. We will dispose of all wastes through safe and responsible methods.

(iv) Wise Use of Energy: We will make every effort to use environmentally safe and sustainable energy sources to meet our needs. We will invest in improved energy efficiency and conservation in our operations. We will maximize the energy efficiency of products we produce and sell.

(v) Risk Reduction: We will minimize the environmental, health and safety risks to our employees and the communities in which we operate by employing safe technologies and operating procedures and by being constantly prepared for emergencies.

(vi) Marketing of Safe Products and Services: We will sell products or services that minimize adverse environmental impacts and that are safe as consumers commonly use them. We will inform consumers of the environmental impacts of our products and services.

(vii) Damage Compensation: We will take responsibility for any harm we cause to the environment by making every effort to fully

restore the environment and to compensate those persons who are adversely affected.

(viii) Disclosure: We will disclose our employees and to the public incidents relating to our operations that cause environmental harm or pose health or safety hazards. We will disclose potential environmental, health or safety hazards posed by our operations, and we will not take any action against employees who report any condition that creates a danger to the environment or poses health and safety hazards.

(ix) Environmental Directors and Managers: We will commit management resources to implement the Principles, to monitor and report upon our implementation efforts, and to sustain a process to ensure that the Board of Directors and Chief Executive Officer are kept informed of and are fully responsible for all environmental affairs. At least one member of the Board of Directors will be a person qualified to represent environmental interests to come before the company.

(x) Assessment and Annual Audit: We will conduct and make public an annual self-evaluation of our progress in implementing these Principles and in complying with applicable laws and regulations throughout our worldwide operations. We will work toward the timely creation of independent environmental audit procedures which we will complete annually and make available to the public.

(3) Green Packaging Recommendations: The World Packaging Organization (WPO) proposes the establishment of a global project, designated the International Packaging Programme, to be implemented within the framework of the United Nations system.

The ultimate development aim of the project is to promote better understanding and use of packaging in developing countries; food loss is one major area of concern, since it is estimated to be in the region of 50 percent in some least developed countries, and 30 percent in most other developing countries.



However, the WP initiative will have several other important impacts, particularly vis a vis international trade, and environmental protection. Some of the objectives include:

(i) provision of impartial information to developing countries about environmental issues related to packaging including an "early warning" system for packaging producers users in those countries.

(ii) provision of information on packaging and labelling regulations, setting up a developing country network his provision.

### **International Standards Organization**

An extremely important development in international environmental issues involves work by the International Standards Organization (ISO) to development new systems of environmental management at the global level. Such systems -- which will include environmental auditing standards -- are of direct importance to lenders, particularly in determining due diligence procedures for offshore lending.

**In 1993, the ISO established a Technical Committee on the Environment.**

In 1991, in response to the worldwide importance of environmental management systems, the International Standards Organization (ISO) and the International Electrotechnical Committee established the Strategic Advisory Group for the Environment (SAGE). The mandate of SAGE included:

- assess future international standardization, to apply the concept of sustainable industrial development. Work will include consumer information and eco-labelling; transport of resources, in particular raw materials and energy; and environmental effects during production, distribution, use of products, disposal and recycling;

Working groups established under SAGE were formed, to begin developing international

standards for: Environmental Management Systems; Environmental Auditing; Environmental Labelling; Standards for environmental performance evaluation; Industry Mobilization Plans; Life-cycle Analysis; and Environmental Aspects in product standards.

*Quality Management:* One approach to environmental management, which has originated from industry, is to link environmental performance to mainstream Quality Management standards. The underlying assumption of Quality Management Systems is that, by putting in place management systems like purchasing control systems, product identification and traceability standards, process controls, exporters can improve their competitive stance.

In 1987, the *ISO 9000 Quality Management Systems* was issued as a voluntary guideline for enterprises, outlining different stages of quality management. These range from product design to internal audits. As one of the most successful standards for management systems ever produced, thousands of companies in 70 countries have now been accredited under the ISO 9000 series.

There is considerable interest among industry - particularly large corporations -- to link environmental performance to "total quality" management. That is, companies that pursue total quality management should, by definition, experience overall improvements in environmental management. Although this is an obvious generalization, this interest has sparked continued work of the SAGE group, by linking international standardization of environmental practices to the development of important new environmental management standards.

*ISO Technical Committee 207:* In 1993, the ISO established Technical Committee 207. In the next three to four years, the ISO is charged with developing international environmental management standards, under the ISO 14000 Series. Standards are expected to be developed in four areas:



- (1) Environmental Management
- (2) Environmental Auditing
- (3) Environmental Labelling
- (4) Environmental Performance Evaluation.

Such "standards" are likely to be different from technical standards, adopted under the ISO, for telecommunications, transport, electronics or other areas. These standards are likely to comprise of management performance targets.

Nonetheless, the mandate of the ISO TC 207 will be of particular importance to lenders, as they move to develop internationally-accepted due diligence procedures.

Standardization in such areas as environmental management, environmental auditing and performance evaluation will be extremely useful, both in internal environmental evaluations, as well as assessing the potential risk of a borrower.

*World Health Organization (WHO) Environmental Health Guidelines and Criteria:*

The WHO has issued non-binding guidelines for drinking water and air quality. These guidelines, which are based on scientific data, are intended to serve as a benchmark for the development of national air and water quality standards.

(i) *Drinking Water Guidelines:* In 1993, the WHO issued guidelines for drinking water quality. Developed over several years, they contain recommended maximum concentrations of microbial and chemical contaminants.

(ii) *Air Quality Guidelines:* WHO first published global air quality criteria and guidelines for urban pollutants in 1973. These guidelines, which cover the major conventional (non-toxic) pollutants -- sulphur oxides, particulates, carbon monoxide, photochemical oxidants and nitrogen dioxide.

Since 1976, WHO has also supported (with UNEP and the ILO) the Environmental Health Criteria Programme, intended to provide national authorities with information

concerning chemicals hazards.

**International Environmental Agreements**

International environmental agreements (IEAs) have existed for over a century. They were first drafted to conserve endangered wildlife, and protect the world's marine environment.

The depletion of whale, fish and other stocks were early concerns.

Some 180 international environmental agreements now exist.

Today, an estimated 180 IEAs exist, covering a broad range

of pollution reduction, control of chemical dumping in international waters, control of sulphur dioxide emissions, etc. The latest agreement to be adopted is the June 1994 *Convention on Desertification*, which comprises strategies to address land degradation and desertification. Below is a summary of some key international agreements, which are of interest to lenders.

**Basel Convention (Hazardous Wastes)**

Each year, roughly 340 million tonnes of hazardous wastes are generated. Precise estimates of total amounts are difficult, because of differences in technical categorization, monitoring, etc.

The following classification by recent UK Government guidelines outlining potential contamination of land from different activities, is a useful summary of the most common sources of hazardous wastes:

- \* Agriculture: (deceased livestock, fungicide or pesticide use
- \* Extractive Industry: Handling/storage of ores and carbonaceous materials
- \* Energy Industry: production of gas, or heat treatments of fossil fuels
- \* Production of Metals
- \* Non-metals production
- \* Glass Making/Ceramics production
- \* Production and use of chemicals
- \* Engineering and manufacturing processes
- \* Food processing industry

- \* Animal by-product processing
- \* Paper, pulp and printing industry
- \* Timber and timber production
- \* Textiles production
- \* Rubber Industry
- \* Transport Sector
- \* Waste Disposal
- \* Miscellaneous

Approximately 10 percent of total wastes are shipped internationally. The bulk of international transfers takes place between industrialized countries. The number of waste shipments between the United States and Canada are estimated at 6,000 per year.

A small percentage of total waste shipments move from industrialized to either transitional or developing countries. Often, the country of import lacks adequate waste disposal facilities, for domestic waste treatment, let alone imported wastes.

**The number of waste shipments between Canada and the U.S. each year is roughly 6,000.**

To establish international controls on the international transfer of hazardous wastes, in 1989, governments agreed to the *Basel Convention on the Control of Transboundary*

*Movements of Hazardous Wastes and their Disposal*. The Convention entered into force in 1992. As of October 1993 there were 44 parties to the convention. General provisions of the *Convention* include commitments to:

- reduce the generation of wastes to a minimum;
- reduce the transboundary shipment to a minimum, and to ensure that wastes are disposed of as close as possible to the source of generation;
- ensure the environmentally-sound management of hazardous wastes;
- ensure that equal requirements are applied to hazardous wastes exported as for those disposed domestically (principle of non-discrimination);
- cooperate in promoting low-waste

technologies, with the goal of reducing and eliminating the generation of hazardous wastes;

- promote technical cooperation and information exchange, particularly with developing countries.

The *Convention* establishes several waste export provisions, including: the prohibition of waste shipments to non-Parties to the Convention, nor to countries without equivalent environmental standards; to the Antarctica; if the importing state has prohibited such imports; if appropriate disposal facilities are available at the country of origin.

In addition, a system of Prior Informed Notification and Prior Informed Consent procedures are established under the Convention, to ensure that importing countries have prior knowledge, and give prior authorization, about incoming wastes.

*Export Bans:* In March 1994, at a Conference of the Parties to the Convention, agreement was reached on two important export restrictions.

(1) Effective immediately, all waste shipments from OECD to non-OECD countries are banned:

(2) Effective 31 December 1997, all waste shipments from OECD to non-OECD countries are prohibited, for the purpose of recycling or waste resource recovery, are banned.

*Protocol on Liability and Compensation:* An important development under the *Basel Convention*, of interest to lenders, is agreement by governments to develop an International Protocol on liability and compensation for hazardous waste shipments. Under consideration is liability of the exporter; consideration of the establishment of an emergency fund, to provide emergency assistance; the establishment of a Compensation Fund for civil liability issues; and the establishment of dispute settlement provisions, under the existing scope of the Convention.



(For more information on the Convention, please see International Trade and Hazardous Wastes, UNEP Environment and Trade Series Number 7, 1994).

### **Climate Change Convention**

For the last decade, scientists have become increasingly alarmed about the effects on the world's climate, because of the steady build-up of greenhouse gases in the Earth's atmosphere. Computer modelling suggests a link between increased concentrations of carbon and other "greenhouse gases," and changes in the planet's climate. Empirical evidence already shows global warming trends over the past 15 years: six of the seven hottest years ever recorded have taken place in the past decade.

The prospect of more severe, and more frequent droughts is closer. In 1994, an estimated 7.5 million people in Ethiopia alone face starvation because of drought. In Northern China, the worst drought ever now threatens water-supplies in 570 cities. Future economic development in the Northern region is now threatened, and water reserves in Beijing are projected to dry up entirely in a few years, because of long-term drought.

Although considerable uncertainty remains, the likely impacts of climate change may include: an average rise in the Earth's oceans, thereby submerging entirely low-lying islands, and inundating some low-lying coastal areas, such as in the Netherlands, the Nile Delta and Eastern Seaboard of the United States.

Estimated insurance costs have already been calculated to be in the billions of dollars in damages. In addition, climate change is also likely to affect rainy seasons and agricultural growing patterns, to shift irrigation patterns, and to bring a northwards movement in insect vectors, such as the possible return of malaria to southern Europe and North America.

In response to these threats, in June 1992, 150 governments signed the *Framework Convention on Climate Change*. As the title suggests, the Convention provides a

"framework" for future action, as opposed to making any specific commitments.

The Convention recognizes the responsibility of industrialized countries in reducing carbon dioxide emissions, and specifies that OECD countries should "aim" to stabilize greenhouse gas emissions at 1990 levels, by the year 2000. Countries also have the obligation to protect greenhouse gas "sinks", such as forests and marine environments.

A number of options are being reviewed for future action under the Convention. Already,

**Six of the seven hottest years ever recorded have taken place in the past decade.**

n u m e r o u s governments have committed national energy policies to greenhouse gas stabilization and a 20 percent reduction. However, given the enormous economic

implications associated with the targets of the Convention -- greenhouse gas emissions come from virtually all industry, household, transport and other sectors -- progress will be extremely difficult. Some options which will likely be considered include:

*Targets and Timetables:* The commitment by Parties to meet specific greenhouse gas stabilization and eventual reduction targets, with agreed-upon timetables to meet those targets.

*Carbon Taxes:* Both the EC and US have proposed an international system of carbon taxes be considered, to help meet stabilization targets. Unlike sulphur dioxide emissions, which can be filtered through the use of end-of-pipe scrubbers, carbon dioxide emissions cannot be removed with current technologies, in a cost-efficient manner. Hence, market-based instruments are widely regarded as being an important option in greenhouse reduction strategies.

*Tradeable Emission Permits:* The establishment of a global system of tradeable emissions, similar to tradeable permit systems



in place in the US and elsewhere. However, considerable controversy has already arisen concerning the distribution of permits, and whether they should be based on a per capita basis -- as countries like China and India argue -- on an existing emissions basis, as OECD countries argue, or on a combination of both.

*Joint Implementation:* The assumption of joint implementation is to address diminishing returns of those countries which have made energy efficiency gains. Rather than directing additional resources towards marginal benefits in greenhouse gas emissions at home, countries and companies would provide funding to countries in desperate need of financing, to make initial gains. The overall benefits would be the same, and gains would be made in efficiency. Already, joint implementation at the private-sector level has taken place, involving a utility in California assisting in energy efficiency in Poland.

#### **Montreal Protocol** (Ozone Layer)

The depletion of the ozone layer is caused by increased loadings of chlorine and other chemicals in the Earth's stratosphere. Major sources of such chlorine are chlorofluorocarbons (CFCs), which are widely used in air conditioners, refrigerators, as cleaning solvents for electronic parts, and in other uses. In addition to CFCs, other chemicals also cause ozone layer depletion: they include halons (used in fire extinguishes), methyl chloroform and others.

The effects of ozone layer depletion are linked to increased levels of ultra-violet radiation (UV-B) reaching the Earth's surface. (The ozone layer filters this harmful radiation.) It is estimated that a 10 percent decrease in the ozone layer will lead to a 26 percent increase in cases on non-melanoma skin cancer. That is equivalent to 300,000 cases per year.

Incidents of more fatal cutaneous melanoma skin cancer are also on the increase. More recent estimates, however, suggest that 700,000 new cases of skin cancer in the U.S. alone are the result of increased UV-B radiation linked

to ozone layer depletion. Other effects include increased cases of eye cataracts, an overall weakening of the human immunity system, a negative impact on plant and crop growth rates, and a disruption in the marine food chain.

*The Protocol:* Negotiated in 1987, the *Montreal Protocol on Substances that Deplete the Ozone Layer* is designed to shut down the billion-dollar chemical industry which manufactures CFCs and other ozone-destroying substances. Under the original convention, specific targets covering "controlled substances" were listed, and a timetable for the reduction and eventual phase-out of those substances was agreed to. In light of new scientific evidence which suggests that the depletion of the ozone layer is worse than suspected in 1987, the Protocol has been amended and considerably strengthened twice.

**One person dies of skin cancer every hour.**

The Protocol contains several innovative and forceful mechanisms, including provisions concerning the banning of trade in controlled substances with non-Parties; provisions restricting exports of controlled substances with non-Parties and governing trade between Parties; monitoring and enforcement provisions; and provisions intended to assist developing countries meet the disciplines of the Protocol.

One of the important features of the Protocol is the establishment of a Multilateral Fund, to assist developing economies switch to safer, CFC-free technologies. In 1994, the Fund was replenished by governments for the next three years, with a funding level of \$510 million, to assist developing countries. (For more information, please see Trade Measures and the Montreal Protocol, UNEP Environment and Trade Series, Number 6, 1994.)



## **Convention on Long-Range Transboundary Air Pollution**

Global emissions of sulfur and nitrogen from the burning of fossil fuels resumed record high levels in 1991, following a drop in overall emissions in 1990. Each year, some 70 million tonnes of sulphur dioxide is released into the atmosphere, together with 27 million tonnes of nitrogen in the form of nitrogen oxides. Although gains have been made in most industrialized countries, they have largely been offset by increased energy consumption in emerging market economies, as well as increased use of sulphur-rich coal in China.

The main objective of the Convention is to control long-range damages from emissions of sulphur dioxide, and other pollutants. In 1979, governments first signed the Convention. As of May 1994, it has been ratified by 38 countries. Activities under the Convention include (i) monitoring long-range air pollution, consisting of data collection; measurement of air and precipitation quality; and other activities; (ii) cooperation on scientific research to measure the environmental and other effects of air pollution, in terms of critical loads. In addition to sulphur dioxide, other pollutants under the Convention include nitrogen compounds; (iii) international cooperation on pollution abatement technologies. This consists of developing and exchanging information on "cradle-to-grave" technologies.

A key Protocol under the Convention is the *Protocol on the Reduction of Sulphur Emissions or their Transboundary Fluxes*, which calls upon governments to reduce sulphur emissions by at least 30 percent, using 1980 emissions levels, by 1993. A new and tougher Protocol was adopted by governments in June 1994, and encompasses two-stages:

(i) Emission ceilings ranging from 30 to 87 percent of 1980 emissions levels have been set for each Party. This differentiated schedule, covering the years 2000, 2005 and 2010. After assessing cost-effectiveness of different approaches, governments agreed on the need to reduce total emissions of sulphur deposition in

Europe by at least 60 percent;

(ii) New requirements have been set for certain stationary combustion sources, and for the sulphur content of gas oils. The Protocol also calls for the application of cleaner technologies to reduce emissions, including guidelines to raise energy efficiency, increased reliance on renewable energy, etc.

Protocols also exist to reduce nitrogen oxide and volatile organic compound (VOC) emissions. Under the latter, governments are required to reduce VOC emissions by at least 30 percent by 1999. Future work under the Convention may include the development of Protocols targeting further pollution reduction targets, and the development of best-available technologies.

A new procedure, the "critical load approach," was recently adopted by governments as forming the basis of future targets. This approach measures the specific environmental vulnerability of different regions. In the 1980s, acid rain was shown to be a major cause of environmental damage to forests, lakes, rivers as well as historic buildings.

## **Freshwater Agreements**

Several international agreements, often on a bilateral basis, cover the protection of shared freshwater resources, such as rivers and lakes. Two examples are agreements covering the Rhine River, and the Great Lakes.

*Rhine River:* The International Commission for the Protection of the Rhine was established in 1950, with pollution controls introduced in 1976, under the *Rhine Chemicals Convention*. In 1985, France joined the *Rhine Chlorides Convention*. Following the Sandoz chemical accident in 1987 in Basel, efforts were strengthened towards chemicals management of the Rhine, and more stringent water-quality controls are now in place, coupled with tougher monitoring provisions.

*Great Lakes:* The United States-Canada *International Joint Commission* was established



in 1909, to manage the Great Lakes -- which constitute the largest freshwater system in the world. In 1978, the IJC sponsored the *Great Lakes Water Quality Agreement*, which set an ambitious plan to restore water quality in the system, safeguard against pollution, and put in place environmental management systems.

**Each year, 70 billion tonnes of sulphur dioxide is released into the atmosphere.**

In the 1970s, environmental problems in the Great Lakes were extremely serious: municipal sewage, industrial and agricultural chemical discharge, oil, organic sludge, phosphate detergents and other pollution brought the Great Lakes in general, and Lake Erie in particular, to the brink of ecological collapse.

All lakes continue, for example, to be threatened by accumulating loads of toxic contamination. The IJC has identified 362 chemicals, of which many pose human health, plant, fisheries and bird-life threats.

The long-term, low-dose health threats of toxic contamination for millions of people in the region are beginning to be understood. One recent study, for example, found that Michigan women who regularly consumed fish from the Great Lakes during pregnancy had newborns with neurobehavioral and physical defects. Toxic and other pollution has had serious impacts on the region's bird and fish life. Two thirds of the basin's wetlands have already been lost to development.

Following extreme environmental pollution problems, including the identification of toxic waste sites -- such as Love Canal -- along the Lakes, progress has been made. Nutrient levels have been significantly reduced. So too have levels of toxic contaminants. However, the rate of reductions in toxic pollution has levelled off, and current toxic contamination poses long-term threats to the survival of the Lakes ecosystem. Conditions of fisheries remain degraded.

Expected clean-up costs to address identified "hot-spots" has been estimated by the IJC at between \$12-25 billion. This takes into account existing problems, such as the clean-up in Canada of 43 areas listed in need of urgent clean-up action, but not longer-term problems, such as the impact of climate change on the Great Lakes Basin.

### **Marine Protection**

Most international attention has focused on atmospheric pollution, and waste management, and less on pollution of the high-seas. Degradation of the marine environment is, however, often an acute concern along coastal areas.

Problems include coastal development, and the loss of wetlands and habitats: increased discharges of municipal sewage, as well as litter and plastic garbage: dredging of sediments: accidents from oil spills, as well as intentional (and illegal) cleaning of ballast from ships: phytoplankton blooms and toxin outbreaks in some coastal zones; increased pollution, including heavy metals, hydrocarbons, hydrochlorinated organic compounds, and toxins.

Overfishing in most seas have also led to severe depletion, and some cases, the total collapse of fish stocks. Accidents from oil tankers, as well as intentional clearing of ballast from ships, has also contributed to marine pollution. Eutrophication in seas is also a serious problem along some coastal areas, as well as in confined marine environments like the Baltic, the Northern Adriatic, the Black Sea, Gulf of Mexico, regions of Indonesia and Caribbean seas, parts of the North Sea, and the mouth of the St. Lawrence and Amazon rivers, to name just a few.

In response, numerous international agreements have been adopted by governments to coordinate actions to protect seas and oceans. The International Law of the Sea Convention represents one of the most complex and encompassing international legal agreements



ever struck.

Provisions include extension of coastal sovereignty from three to 12 miles; full control of off-shore fisheries to 200-miles; guarantee of the right of transit through straits used for international navigation; and strongly-worded language related to over-fishing. One of the most controversial provisions is the inclusion of international rules related to the mining of the ocean floor.

The *Convention*, negotiated in 1982, is expected to be ratified in 1994, with support expected from the United States. It sets a framework for the rational exploitation and conservation of the sea's resources, and provisions to protect the marine environment. Commitments include pollution control on the high-seas: tighter controls concerning fishing on the high-seas, navigation, and other measures.

A long-standing concern of the Convention is that it lacks specific measures to control land-based sources of marine pollution, which make up 70 percent of all marine pollution. As yet, no international regime exists to control land-based sources of pollution. Along US coastline, for example, an estimated 273 million pounds of toxic chemicals such as ammonia and chloroform were dumped into streams and into oceans. This represents an estimated 12 percent increase from the previous year. Other major pollution sources include municipal sewage.

In response, several regional approaches to pollution-problems do exist, including UNEP's *Regional Seas Programmes*.

Launched in 1974, the programme now covers regional seas in all regions. It is modelled on the 1974 *Helsinki Convention on the Baltic Sea*, the first regional accord to introduce control measures to cover severe pollution sources.

The centre-piece of the Regional Seas programme is the *Mediterranean Action Plan*, adopted in 1975. Since then, several protocols have been signed on particular polluting

sources. Although the programme has contributed to improved environmental quality in the Mediterranean, severe environmental problems persist: an estimated ten billion tonnes of domestic and industrial waste, for the most part untreated, are dumped into the Mediterranean each year. The combination of sewage and industrial wastes, over 70 rivers which discharge; over-flowing tourists at high season have all combined to make the Mediterranean the most polluted sea on the planet.

*Convention on the Protection of the Marine Environment of the Baltic Sea Area (1992 Helsinki Convention):* Adopted 1992, Helsinki. Not yet in force. Objectives include taking all measures, individually or by means of regional co-operation, to prevent and eliminate pollution in order to promote the ecological restoration of the Baltic Sea area and its ecological balance. Parties shall apply the precautionary principle (take preventive measures when there is reason to assume that hazards may be created in the marine environment); promote the use of best environmental practice (BEP) and best available technology (BAT); and apply the Polluter Pays principles.\

#### **Convention on Biological Diversity**

An estimated 1.4 million species have been identified. Yet, estimates suggest that between 10 and 30 million species exist. Recent estimates, however, suggest accelerating extinction rates, with as much as 50 species becoming lost each day. The causes are varied, but include loss of habitats -- especially related to the loss of tropical forests, wetlands, coral reefs and other areas.

**Estimates suggest between 50 to as many as 100 species become extinct each day.**

Potential economic benefits of biodiversity is enormous. In June 1994, for example, the U.S National cancer Institute announced that a tree species (the Bintangor) in the Malaysian rain



forest may be able to block the spread of the virus which causes AIDS. Agreements were recently signed allowing scientists to conduct experiments of the tree.

This one example underlines the economic and other benefits of conserving and sustainably managing biodiversity. In response to these challenges, in 1992, governments signed the *Convention on Biodiversity*. The objective of the Convention combines obligations for the conservation of biodiversity, with a broad economic agreement concerning the sustainable use of genetic and other resources.

Provisions are set out for access to genetic resources, which are becoming increasingly important in the development of biotechnologies, as well as in the pharmaceutical and agri-seed sectors. Although these are general provisions, the Convention has already stimulated a specific agreement in July 1994 related to access of genetic resources.

Other important provisions in the Convention include general obligations for "biosafety" -- that is, measures to control the modification of living and other organisms, for commercial application by the biotechnology sector. General provisions are contained related to intellectual property rights.

From the outset, the Convention has been a source of controversy and strong support: in 1992, for example, the Bush Administration -- stating the Intellectual Property Rights provisions in the Convention would undermine US jobs, refused to sign the Convention.

That position was subsequently reversed by the Clinton Administration. Yet, the whole issue of IPR systems, access issues and other economic questions of importance to the billion-dollar biotech and other sectors will be a source of increased analysis.

(For more information, please see Institutional Mechanisms Supporting Trade in Genetic Materials: Issues Under the Biodiversity and GATT/TRIPS, UNEP Environment & Trade

Series Number Four, 1994.)

### **GATT/WTO and the Environment**

An area of intense concern is the relationship between environmental protection policies and trade liberalization. In 1991, a GATT Dispute Panel, in weighing a complaint from Mexico about attempts by the US to ban imports of tuna which also killed large numbers of dolphins through the use of driftnets, found that US bans were GATT-inconsistent. Since then, the GATT has come under growing pressure to address trade-environment links.

In 1991, a GATT working group on trade and the environment was re-established, and discussed for three years three agenda items: (i) the relationship between international environmental agreements which use trade measures, such as bans and quotas, and GATT rules. (ii) transparency of national environmental regulations; and (iii) eco-labelling and eco-packaging.

In the Final Act of the Uruguay Round, specific environmental provisions were included. These include a reference, in the non-legally binding preamble, committing Parties to environmental protection and "sustainable development." **Trade and Environment has emerged as among the most important intersections of environment and economy policy since the Earth Summit.** Within the text, two agreements govern national laws related to the environment: the Technical Barriers to Trade Agreement (TBT), and the Sanitary and Phytosanitary Agreement (SBS).

Both place increased emphasis on international standards, while leaving individual countries the right to establish their own national standards. Such standards relate to product standards (TBT), as well as some provisions for process-related standards.



Other provisions include an allowance, under the subsidies codes, for 20 percent subsidies on retrofitting of environmental technologies, recognition of the importance of the environmental services sector, and agreement to establish a Committee on Trade and Environment.

Over the next two years, the Committee will review a wide range of environmental policies, including Domestically-Prohibited Goods, eco-labels, environmental taxes and other areas.

### **Global Environment Facility**

In March 1994, governments agreed to re-design the governance, and replenish the funding base, of the Global Environment Facility (GEF). The GEF, which is administered by the World Bank, UN Development Programme and UNEP, was originally established as an interim mechanism, intended to assist developing and transitional economies in the financing of solutions to global environmental problems.

Under the permanent structure established earlier this year, funding levels for the GEF will be approximately US\$2 billion over three years. The financing and assistance will continue to address four global issues: climate change; pollution of international waters; destruction of biodiversity; and ozone depletion. In addition, land-degradation will also be covered under GEF funding.

Thus far, the GEF has committed \$750 million in funding to support some 100 environmental projects. A future emphasis of the GEF will include (i) the financing of response strategies under the conventions on climate change and biodiversity; and (ii) the examination of opportunities in joint leveraging of public-private sector finance to address environmental problems.

(For more information, please contact the Global Environment Facility, The World Bank Group, Washington, D.C.)

*NADBank:* In addition to the GEF, several national and regional environment fund's have been established, for environmental projects. For example, in conjunction with the NAFTA accord, the North American Development Bank (NADBank) is being established, designed to address the environmental impacts of prior unregulated and concentrated economic activity along the Mexico-U.S. border region. With the assistance of the World Bank and Inter-American Development Bank, expected funding is around \$7-8 billion.

*Global Environment Management Corporation:* In 1994, the U.S. Administration announced US\$50 million worth of guarantees for a new fund to help cover start-up costs of environmentally-related business in developing countries. Key sectors to be targeted under the fund will be clean water and clean energy, focusing on Latin America, Asia and Central and Eastern Europe.

## **Section Four** **Investment Trends/Management Tools**

The section provides of an overview of some trends in environmental investment; information of waste reduction and cleaner production; and introductory information on environmental accounting, environmental impact assessment, environmental auditing and corporate environmental reporting.

Of these, assessment and auditing have become increasingly important tools for lenders.

### **(1) Green Investment**

**Overview:** The value of environment activities, including pollution abatement, waste management, cleaner production and other technologies and services, is forecast by the U.K. firm Ecotec, to reach US\$320 billion per year by the year 2000, and \$570 billion in 2010.

**Environmental expenditures are forecast to reach US\$320 billion per year, in six years.**

At current levels, the environmental sector is comparable to pharmaceutical, aerospace, forestry or sectors in many countries. The main activities related to

environmental expenditures include: waste management: water and wastewater treatment: air pollution control equipment: contaminated land remediation; electronic monitoring; and environmental services.

One response to public concern about environmental issues is the emergence of so-called "Green" investment funds. Since 1988, several dozen investment funds -- including pension funds -- have been launched, with portfolios concentrating on environmental service companies. Several major companies -- including Merrill Lynch and John Hancock -- have established environmental funds.

To date, in Europe alone, over 70 ethical/environment investment fund have been established. Estimated value is US\$1 billion.

Although they remain a marginal part of total investment funds, green funds have managed to perform well.

For example, the initial offering of Hancock's Freedom Fund brought in \$46 million. Merrill Lynch's 1989 issue of its Environmental Technology Fund was massively oversubscribed -- by some \$70 million -- within three days of its offer.

The Merlin Ecology Fund, the first Fund in Europe to invest only in companies which positively benefit the environment, as opposed avoiding environmentally damaging firms, has performed well.

Some forecasts predict that green funds are now set to keep pace with health-related funds, with average annual growth rates of 15 percent or more. Of this, the bulk of investment is longer term.

As expected, most of green-related investments are concentrated in the United States, Europe, Australia and few other countries. However, an area of particular importance to investors is the expected increase in expenditures on pollution control, waste management, clean-up and other activities in transitional and emerging market economies.

In comparison with a relative slowdown in OECD economies over the last few years, emerging markets have been a powerhouse of economic growth, with growth rates of 10 percent per annum or higher. Some estimates suggest that, by the year 2010, some 20 percent of total global expenditures on environmentally-related equipment -- waste water treatment, scrubber, waste incinerators, etc. -- will be in developing countries.

### **Cleaner Production**

One area in which returns on investment are likely to remain high involves cleaner production technologies.

The objective of Cleaner Production, which was endorsed by governments in Agenda 21, is



to develop new process technologies which contribute to both economic and environmental improvements.

The rationale is simple: industries that reduce per unit natural resource and energy input, which improve overall production process efficiency, which reduce waste generation, concentrate on waste re-use and recycling, will improve both environmental and economic efficiency.

Several cases in the application of cleaner production in developing countries help illustrate the point:

*Harihar Polyfibers*, employs 1,600 workers at a plant on the Tungabhadra River in Karnataka, (India). Over a six-year period, by installing cleaner production technologies, costs for chemical and fuel inputs decreased, while increasing overall production by 20 percent. Overall energy consumption was reduced by 60 percent, chemical use by 55 percent, and effluent loads by 55 percent.

*FSM Sosnowiec* manufactures automobile lamps, door locks and window winders in Poland. The lamp bodies are made of zinc-aluminum alloy, then copper-nickel-chromium plated. The door locks and window winders are made of steel and then zinc plated.

Waste streams from the processes contain cyanide, chromium-6, copper, zinc and nickel. Following a pollution prevention audit, low concentration plating and pacifying techniques, static (instead of circulating) rinses, and final stage ion exchange columns in the rinsing processes were installed.

As a direct result, usage of water and raw materials significantly decreased. Moreover, waste stream emissions were massively reduced: 80 percent reductions in chromic acid, 95 percent for copper, 80 percent for cyanide, 98 percent for nickel, 96 percent for zinc, and 93 percent for waste water. Of a capital investment of \$36,000, yearly savings were approximately \$193,000 per.

*Century Textiles and Industries Ltd.* employs 7,000 workers in India, and, with an annual turnover of about \$100 million going to exports, is the world's largest exporter of 100 percent cotton fabrics.

The company made extensive efforts to eliminate sodium sulphide in the dyeing process for black articles. Sodium sulphide is highly toxic, and requires extensive waste treatment. A substitute chemical was, however, identified -- hydrol, a by-product of the maize starch industry -- which has resulted in sulphide emission being reduced from 30 parts per million to less than two.

This was achieved without expensive effluent treatment technology. Since the substitute product was essentially part of the waste stream of another industry, the switch brought savings in capital expenses of an estimated \$12,000, and running costs of about \$1,800 p.a.

In both industrialized and developing countries, there is growing number of similar "win-win" examples, in which improved environmental performance coincided with improved economic performance.

In Indonesia, for example, a cement company improved process control, saving \$350,000 p.a. A metal treatment factory in Singapore installed cleaner production equipment, which resulted in annual savings of \$87,000.

Following a recent survey by UNEP's Cleaner Production programme in China, it was concluded that a capital investment of \$17,000 brought over \$350,000 in savings were achieved, while at the same time eliminating more than 50 percent of the COD load in the wastewater of factories involved.

### **Pollution Prevention**

Although cleaner production offers enormous promise, its actual application remains in its infancy. Indeed, the extent to which such programmes can ensure paybacks is still not clearly understood, and such factors as scale of

production, infrastructure, date of capital equipment and other factors also need to be weighed. While many companies are talking about cleaner production, actual application remains a relatively limited.

By contrast, an example of potential "win-win" situations which continues to gain ground among industry is integrated waste management systems.

In 1994, for example, DuPont announced plans to reduce solid wastes put into municipal landfills. The company announced plans to reduce product packaging waste by an additional 50 million pounds per year, by the year 2000, under the WasteWi\$e programme run by the US EPA. This adds to the commitment already made by DuPont to reduce waste by 230 million pounds per year.

Also in 1994, three major European automobile makers -- Renault, BMW and Fiat -- jointly announced plans of ensuring that 95 percent of an obsolete vehicle can be recycled. Plans will include the development of common recycling techniques, so that recycling can be done of each other's models.

Perhaps the best known example of pollution prevention through waste reduction strategies is "3P" strategy adopted by 3M Corporation -- the *Pollution Prevention Pays*. Begun in 1975, the 3P program was 3M's first proactive environmental policy, encouraging employees to solve environmental pollution through prevention, recycling, reuse, and innovative concepts in product manufacturing and development.

Between 1975 and 1992, 3M had undertaken 3500 successful 3P projects, prevented 575,000 tons of pollution, and saved \$550 million dollars. Currently, 3M is hoping that by its latest 3P plus initiatives it can cut generation of waste by 50 percent and reduce releases by 90 percent by the year 2000.

**In 1994, DuPont announced plans to reduce waste emissions by an additional 50 million pounds.**

Similar strategies are now in place in a range of companies across the globe. These include many transnational corporations, such as IBM, General Dynamics, and General Electric. Moreover, these strategies are often inexpensive.

In the UK, for example, after the completion of waste minimization schemes in the Aire and Calder (canal) project, the Centre for Exploitation of Science and Technology (CEST) concluded that if the simple, low-cost methods used there were replicated across British industry, over £1 billion could be saved annually. Recent savings by BP (saving 7,000 tonnes of chemicals per annum, by checking the seals on rising valves), and by ICI, reducing wastes at certain sites by up to 50 percent, underline opportunities for cost-effective improvements to environmental performance.

One indication of improved waste management systems among industry is reflected in the results of a December 1993 survey by the waste management company Shanks and McEwan.

It found that the waste mix in the UK had been undergoing a steady change in recent years, with deliveries to incinerators from large companies declining by as much as 20 percent. This drop was thought to have occurred as waste reduction schemes in these companies took hold.

On the other hand, wastes from smaller and mid-sized companies expanded significantly, suggesting that many smaller companies are identifying and organizing waste for disposal, rather than releasing it illegally into the environment.

### **Responsible Care**

One of the most environmentally-sensitive industries is, of course, the chemicals sector. In response to a long-list of environmental problems, made famous by Bhopal and Basel, the chemicals industry continues to push towards improving its environmental



performance and public image. Lenders have expressed caution in the potential indirect risks of the chemicals sector.

One way in which lender due diligence can, in part, be established may be by identifying those companies which adhere to more targeted codes of conduct regarding chemicals management.

Following an initiative undertaken by the Canadian Chemical Producers Association (CCPA) in 1985, chemical industry associations in the United States, United Kingdom, Australia, Japan, Netherlands, France, New Zealand, and Germany are at various stages of implementing a *Responsible Care* programme.

This commits companies, in all aspects of safety, health, and environmental protection, to seek continuous improvement in performance, to educate all staff, and to work with customers and communities regarding product use and overall operation.

*Responsible Care* programs have not been without drawbacks. Accountability has been weak, and community relations with the general public are still marked by distrust. Nevertheless, in many countries, action is underway to remedy this.

In the United States, for example, a CMA task force is in operation, to monitor compliance with the code of conduct. Moreover, following a serious incident at a Union Carbide plant in West Virginia, and the introduction of SARA Title III legislation passed as a result in 1986, a community awareness program has now been instituted.

Such trends are likely to be followed in other countries where *Responsible Care* is in operation. In the UK, for example, the Chemical Industry Association is pursuing recognition of the *Responsible Care* program for certification under the ISO 9000/BS 5750 quality assurance standard. British Standards certification is seen as carrying more authority than the industries own internal bodies.

*Principles of Responsible Care* include:

- \* Develop and produce chemicals that can be manufactured, transported, used and disposed of safely;
- \* Make health, safety and environmental considerations a priority;
- \* Report promptly to officials, employees, customers and the public, information on chemical related health or environmental health hazards;
- \* Counsel customers on the safe use of chemical products;
- \* Operate plants and facilities in a manner that protects the environment;
- \* To work with others to resolve problems created by past handling and disposal of hazardous substances;

#### **Environmental Accounting**

In recent years, there has been growing emphasis on the development of a new or revised System of National Accounts (SNA). Efforts towards the so-called greening of income accounts is part of a larger effort towards the so-called internalization of environmental externalities.

The broad goal in the development of environmental and natural resources accounts is to create automatic, across-the-board economic valuation signals, which in turn will help people conduct economic activities in an environmentally more sound manner.

Although actual reforms are likely some way off, a tremendous amount of activity is currently underway in devising new systems of income accounts.

At the national levels, several countries -- including Norway, Australia, Canada, the United States and many others -- continue to develop new proposed amendments to GDP. At the international level, in 1993, the UN

Statistical Office issued its *Integrated Environmental and Economic Accounting* handbook, which contains recommended guidelines for specific income amendments.

Considerable challenges remain with national income accounts, including how to quantify the changing flows of benefits stemming from the environment. Since many of such benefits do not involve explicit market transactions (ie. fresh air is not exchanged in the marketplace), such measurements are arguably outside the conventional scope of GDP.

Some of these issues relate to the inability of income accounts to take account of welfare issues, since their function is to measure total economic activity.

However, consensus is forming on several broad issues, including: the need for income accounts to reflect environmental degradation, in the same way that depreciation of other assets are reflected; the need to exclude or reduce some defensive expenditures associated with clean-up actions; the need to value environmental services.

This is not, however, to suggest that consensus exists as to how to include different measurements of environmental degradation and benefits in income accounts. Related issues include the use and limitations of contingent valuation techniques; the degree to which discount rates should be reduced, to reflected longer-term sustainability goals, and the central question of the role of sustainability -- and its intergenerational implications and global context -- in relation to annual, national income accounts.

Despite these and other questions, it is fairly clear that problems do exist with income accounts, along the following issues:

\* current national income accounts are able to measure the products of economic activity, but not the by-products, such as pollution;

\* some environmental protection expenditures are measured a final output. That is, clean-up

costs or defensive expenditures are measured as final output;

\* depreciation of environmental assets and natural capital is not measured;

\* environmental liabilities, such as hazardous waste sites, are not measured in income accounts as economic liabilities.

Three general approaches can characterize the critique of national income accounts:

(i) the product is incorrectly measures, and therefore Gross Domestic Product should be adjusted;

(ii) depreciation is incorrectly or incompletely measured, and Net Domestic Product should be adjusted; and

(iii) wealth is incorrectly measured, and so National Wealth should be adjusted.

#### *Implementing Environmental and Resource Accounting (ERA)*

Numerous approaches continue to be mooted concerning how to amended national accounts. Although progress towards the 'greening' of GDP will be, by the nature of accounting principles, very slow, there is now consensus that reforms will be made. it is a question of when, and not if.

For lenders, longer term implications of such reforms in terms of asset values -- particularly for resource extraction and pollution intensive sectors -- may be significant.

**GDP: User Cost in Resource Extraction:** The lack of treatment of natural resource depletion in national accounts is an obvious omissions, given that for many countries, natural resource extraction and harvest is a large percentage of GDP.

However, resource extraction processes, such as the clear cutting of forests or mining of non-renewable resources -- represents a drawing down of natural assets which are not



reflected in GDP accounts. Work by Repetto of WRI, and El Serafy indicate the following: true income from resource extraction should equal the *perpetual* income attainable from investing a portion of the net returns from this extraction.

The measurement of perpetuity is obviously difficult, since it requires at the outset clear indicators of whether total natural resource wealth is increasing or decreasing.

*Environmental Services and Damages:* In the GATT Uruguay Round Final Agreements, governments recognized the growing importance of the environmental services sector. A key problem from an environmental perspective is the definition of environmental services.

Although the GATT Contracting Parties referred to services in line with waste management or engineering consulting services, accounting reforms look at services in a much broader context:

(i) Environmental Services, refers to the value of services provided by the environment to the economy -- such services for the most part focusing on waste disposal services, which can be measured as the incremental cost gap between what it would cost the producer to dispose of wastes by means other than emitting it directly to the environment;

(ii) Environmental Damages, refers to the value of damages caused by a deterioration in environmental quality. This may include direct damages, such as increased health care costs, such as respiratory diseases associated with jumps in air pollution; or indirect damages, such as loss of the use of a clean river because of pollution.

*Include Environmental Deterioration in Gross Product:* If natural resources are to be measured as part of a country's asset base, together with reproducible capital, then GDP should include the deterioration of those assets through extraction and pollution.

One result of this approach is that GDP would decline in those countries which do not allocate enough on environmental protection, to maintain current levels of environmental quality. By contrast, GDP would remain unchanged for countries which spend enough to maintain current levels of environmental quality.

One of the problems in this approach refers back to the central issue of environmental valuation: it is clear that the value of environmental degradation is not comparable to the value of environmental protection expenditures. Although this holds true for infrastructure, whereby maintenance costs offsets depreciation, this is not true for environmental defensive expenditures.

*Defensive Expenditures:* Intermediate expenditures on pollution abatement by the private sector are not part of domestic product, a variety of expenditures by households and governments on environmental protection are currently measured as part of GDP.

One question associated with this issue is the welfare benefits of such expenditures: since many environmental expenditures, such as oil spill clean-ups or remediation of contaminated land-fills, do not add to welfare, they should not be included in GDP.

In response, it is of course noted that the purpose of GDP is to measure economic activity, and not welfare gains. However, an associated issue is the measurement of intermediate and final output.

To illustrate, if a government allocates a certain amount on environmental expenditures for waste management, but the services are rendered by the private sector, the question has been raised as to whether the services should be regarded as intrinsically intermediate, and GDP should be reduced.

*Net Domestic Product: Natural Resource Depletion:* One of the first advocates to argue that the depletion of natural resources should be treated as equivalent to depreciation of



reproducible capital is Robert Repetto et al., of the World Resources Institute (Wasting Assets: Natural Resources in the National Accounts). Repetto argues that income should only be counted as to that which exceeds asset consumption, and that a deduction of natural resource depletion should be included in NNP. In Repetto's analysis of corrected NNP to include resource depletion, for example, Indonesia's NNP was adjusted downward from a conventional measurement of 7.1 percent growth rate, to 4.0 percent.

This approach embodies two assumptions: (i) that natural resource stocks should be viewed as national assets, in the same manner to reproducible assets, and (ii) that the basis of valuation for the natural assets should be based on the "net price method," whereby the net price is measured as the market price of the resource, less the average unit cost of production.

For non-renewable resources, such as oil, that NNP should be adjusted to measure the depletion as the net price times the quantity extracted in the accounting period. Discoveries of new resources are treated as negative depletion, so that NNP can exceed GDP. However, such discoveries can also be regarded as revaluations, or capital gains.

*Environmental Degradation* refers to deducting a value of environmental degradation from GNP, to give a new measure of net product. This recommendation has gained early recognition in the UN draft guidelines for a Satellite System of Integrated Environment and Economy Accounts (1990).

The proposal is to value environmental degradation as the cost of returning the environment to its original state at the beginning of the accounting period, ie. the cost of potential abatement or restoration to achieve environmental quality.

**National Wealth:** Under this issue is how to bring resources and the environment into national accounts. In addition to depreciation, challenges also include how to measure the

extent of resource endowments, and how to value stocks of natural resources.

A great deal of work has already been done in measuring total resources and reserves, especially in the oil sector. The process of amending national income accounts has proven to be extremely slow. Yet, work has been increasing in clarifying how to include some costs of resource depletion, pollution control activities and other environmental considerations in national accounts.

A prerequisite is to establish and quantify an updated inventory of national resource endowments, extraction rates, renewable resource replenishment capabilities and critical thresholds.

Traditional national income and economic measurements (including discount rates) can provide a practical guide to the maximum amount that can be consumed by a nation without eventual impoverishment.

Within the context of sustainable development, income can be measured as the flow of goods and services that the economy generates without reducing its productive capacity (ie. income that could produce indefinitely). This view tends to eliminate the dichotomy between capital and income, recognizing that income should be considered as a stream of services obtained from capital stocks.

*International Efforts:* For several years, efforts have been under way at the international level to amend the UN System of National Accounts (SNA). Recognizing that environmental costs need to be recorded, experiments have been made with so-called "satellite accounts", which list physical and renewable resources in parallel to conventional national balance sheets.

While important differences exist as to how exactly economic activity measurements should be adjusted, it is agreed that the underlying physical database necessary to calculate resource depletion is similar in most approaches. At the international level, the World Bank, the UN Statistical Office,



UNDP's human development index, the World Resources Institute, UNEP and others have been working on environmental accounting from differing but complementary approaches.

In 1993, the UN Statistical Department issued the *Integrated Environmental and Economic Accounting* handbook. It notes that a consolidated System of National Accounts (SNA) has not yet been achieved, although considerable progress has been made both in the design of satellite accounts, as well as in accounting refinements related to the cost, capital and valuation concepts of accounts which include natural assets.

Nonetheless, a *System for Integrated Environmental and Economic Accounting (SEEA)* has been compiled, intended to assimilate some of the approaches which are under review.

A revised System of National Accounts was introduced in February 1994 by the World Bank and other UN agencies, which will take into account social factors, such as population and poverty, and environmental concerns, including the costs of ecological degradation. This, the first revision of the SNA for 25 years, is likely to be a major breakthrough in the ways in which economies are seen to be progressing.

### **Environmental Impact Assessment**

Environmental Impact Assessment (EIA) is a tool, in use for over twenty years, to examine the environmental impacts of a proposed project. Assessments include impacts on human health, the environment, as well as an increasingly wide range of social impact issues. Although most EIAs concentrate on negative impacts, it should be noted that they are also intended to highlight positive impacts as well.

The vast majority of EIAs focus on project specific activities, such as road or industry siting construction plans. However, more recently they have also been used to assess broader impacts of macroeconomic policies,

such as impacts of trade liberalization policies (such as, for example, the 1992 Canadian Environmental Review of NAFTA), structural adjustment, agricultural subsidization and other price stabilization policies. However, in practice, EIAs remain most effect at the project-specific level.

EIA legislative requirements were introduced in the United States, under the U.S. *National Environmental Policy Act*. Although formalized under NEPA, environmental assessments were used years before, to assess impacts of major engineering projects, like hydroelectric dams, nuclear power stations, etc.

**In 1994, an amended system of national accounts was introduced by the UN Statistical Office, to reflect environmental benefits and damages in satellite accounts.**

Today, most countries have in place national and state EIA requirements. In practice, however, the quality and accuracy of EIAs varies greatly, not only because of differences in legislative requirements, but more importantly because Statements too often still pay lip-service to environmental issues, in order to cover regulatory requirements.

NEPA requires that, in undertaking a review, an Environmental Impact Statement (EIS) is prepared, prior to taking any major action which could affect the environment. However, it is important to distinguish between an EIS -- which is a single, and static part of a broader EIA process. This process includes both an estimation of the likely impacts of an economic activity (included in the Statement), as well as follow-up monitoring and evaluation of the project itself, to measure the actual effects as opposed anticipated impacts. In this sense, EIAs are seen as a useful tool in overall project management.

According to the OECD's *Good Practices for Environmental Impact Assessment of Development Tools (1992)*, the following projects are most in need of an EIA:



- \* projects which cause a substantial change in renewable resources use;
- \* projects which substantially change farming and fishing practices;
- \* the exploitation of hydrological resources;
- \* infrastructure;
- \* industrial activities;
- \* extractive industries;
- \* waste management and disposal.

From the perspective of project design, EIAs are most effective when they are *integrated into the project at the outset*, in order to provide practical input to the planning,

**Most countries have in place mandatory EIA requirements.**

identification of project changes, project alternatives, and mitigation options.

Seen as an anticipatory tool, EIAs are most effective when they are introduced at the beginning of a project. In practice, they are rarely applied this way: EIAs have tended to focus on producing a document to meet minimum regulatory requirements, and not as a means of improving the overall efficiency of the proposed project.

In the twenty years that EIAs have been used, the accuracy and effectiveness of EIAs has improved dramatically. Several thousand EIA studies have been undertaken; in the process, advances have been made in the following areas:

*Valued Ecosystem Components (VECs):* In the first step towards building accuracy in EIA, a list of environmental components/indicators that are of particular importance to the project, to the various groups involved in the assessment of the project, and other indicators in relation to the proposed action, are compiled. The idea behind the initial compilation of indicators is to sharpen the

focus and scope of the assessment, by defining the goals of the assessment.

*Cumulative Impacts:* EIAs are not generally concerned with longer-term, cumulative effects of a proposed action. However, given that projects may contribute to the collapse of an ecosystem, or rapid depletion of a resource, work has increased on assessing such impacts.

*Social Impact Assessment:* When large projects, such as roads, dams, factories, waste sites or other projects are concerned, a major issue involves social concerns of the public related to often difficult-to-quantify considerations, such as quality of life, jobs, etc. The development of social indicators has made important contributions, in the development of EIAs in Indonesia.

*Environmental Risk Assessment:* Work has increased in seeking to codify statistically improbable risks, such as that of a tanker spill or system failure, so that such risks can be included in the overall EIA statement.

*Large-Scale EIAs:* At the international level, EIAs take two types: (i) those relating to a specific project which either has transboundary implications in design, or transboundary implications in terms of pollution or environmental degradation; and (ii) assessment of environmental degradation already underway, such as acid rain, ozone layer depletion, whereby transboundary or global impacts are used to help coordinate national responses (ie. abatement strategies, legislation, etc.)

*Technology Assessment:* In 1993, UNEP's Industry and Environment Office in Paris announced plans to begin an assessment procedure for technologies, to provide countries -- particularly developing and transitional economy countries -- with an assessment of the likely environmental impacts of new, current or obsolete technologies.

Today, a great deal of attention is being paid to the identification of the needs of developing countries. Many institutions, such as the



OECD, Federal Environmental Assessment Review Office in Canada (FEARO), the International Association for Impact Assessment (IAIA), to name just a few, are working towards the development of policy coherence in EIA procedures, whereby bilateral and multilateral lending organizations can avoid expensive duplication of EIA procedures, and work towards a kind of harmonization of EIA procedures, in terms of general approach coherence.

*Costs of an EIA:* A long-standing industry complaint is that EIAs are too expensive. Experience, however, shows that EIAs rarely exceed one percent of total project cost, and mitigation rarely exceeds three percent. Experience also shows that the benefits of anticipating and avoiding environmental problems early in the project, usually strengthens the economic aspects of the project, while avoiding far more expensive clean-up and mitigation costs.

*What Works, What Doesn't:* For both commercial bankers, as well as different governments, differences in EIA requirements among countries and industries is a source of confusion, especially among lenders seeking to determine borrower or project evidence of regulatory compliance.

The bewildering number of EIA practices is partly a reflection of different legislative requirements. Generally speaking, however, there are at least six problems in EIAs: (a) a lack of trained personnel to conduct a credible EIA; (b) the absence of an institutional structure and formal development process to implement the EIA; (c) a lack of willingness to integrate the EIA findings in the planning process; and (d) a lack of willingness to apply the EIA without bias; (e) EIAs are too expensive; and (f) lack of consistent terminology and techniques.

Consensus also exists that "off-the-shelf" EIAs do not work; that generic checklists and matrixes are of limited, if little practical value, since each assessment needs to weigh the unique characteristics of proposed projects.

### **EIA Good Practices Guidelines**

In 1992 the OECD Development Assistance Committee (DAC) produced guidelines for *Good Practices for Environmental Impact Assessment of Developing Projects*. Although intended for official development assistance projects, the guidelines provide useful guidance to bankers on basic approaches to EIAs. The most important points of the OECD guidelines include:

(1) *Basic Requirements:* EIAs should be an integral part of the project design. It should begin with an early identification of project alternatives, and likely environmental effects of each option. EIAs should continue through the planning cycle, with public participation.

(2) *Procedures:* The initial EIA should start no later than the project feasibility study, and be completed prior to the detailed planning of the project. The EIA should take account of other environmental survey and data, to determine the international/transboundary aspects of the project. An assessment should also be made of the cumulative affects of a number of small-scale projects.

(3) *Screening:* EIA should begin with a screening session, to determine whether a more thorough EIA is required. Screening enables authorities at the early stage also to reject the proposed project, if environmental impacts are too large. If hazardous materials are involved, potential risks to health and safety should be included in the screening, as well as risks of an accident. At this stage, the following questions should be asked:

(a) which alternative projects could provide comparable benefits? One example: in the energy sector, for example, there has been a great deal of emphasis on improving demand-side efficiency, rather than increasing supply by building more dams or utility plants;

(b) what is the appropriate level of public safety in relation to hazardous technologies?

(c) what degree of environmental protection



should be guaranteed for areas of significant environmental value, like wetlands or old-growth rain forests?

(4) *Scoping*: Once the decision has been made to proceed with the project, an EIA scoping should identify the most significant environmental issues; the timing and extent of analysis required; sources of expertise; an mitigation options.

**What works, what doesn't, and why: a push is underway to streamline and consolidate EIAs**

For projects which require a thorough EIA, a comprehensive gathering of data will be needed, input and regulatory requirements from relevant authorities, affected public groups, NGOs and EIA specialists.

The OECD notes that screening and scoping can be undertaken as one exercise.

(5) *Involving Institutions and Groups*: Environmental institutions, as well as local communities and affected groups -- including equal input from both men and women -- should be included. Non-governmental organizations should also be included.

(5) *EIA Statement*: The following items should be covered in the report:

- \* description of the surrounding of the project and the baseline conditions of the environment (ie existing pollution, vulnerable areas);
- \* an evaluation of environmental effects of supplying the projects (ie freshwater, energy, raw materials);
- \* an analysis of the project on the local population, including attention to gender;
- \* an evaluation of the disposal of waste water, solid wastes and emissions;
- \* identification of positive and negative environmental impacts, with quantification, if possible, of magnitude of impacts;

- \* an analysis of the options for environmental enhancement;

- \* a presentation of the legal and policy framework, including relevant environmental standards and necessary licensing;

- \* an evaluation of the effects of environmentally-relevant pricing policies, taxes and subsidies;

- \* an evaluation of the resulting impacts, identification standards employed in making the assessment;

- \* consideration of basic alternatives;

- \* proposals for adequate mitigation, or alternative design;

- \* a comparison of project alternatives and mitigation measures in terms of ability to mitigate negative impacts;

- \* a statement of measures for the protection and/or resettlement of affected population;

- \* a statement of how non-EIA items are addressed;

- \* a non-technical EIA summary

(6) *External Review*: If possible, an outside and independent review of the EIA Statement should be made.

(7) *Monitoring and Auditing*: The EIA should contain recommendations for monitoring and auditing during the operations of the project, to ensure conformity with the EIA requirements, as well as to test the accuracy of the assessment.

### **International Finance Corporation**

In the IFC September 1993 paper *Environmental Analysis and Review of Projects*, a very useful overview of EIA and environmental review procedures is outlined, which is of interest to commercial lenders, particularly since the IFC is the world's largest



source of direct project financing for private sector investment in developing countries. In fiscal 1993, for example, the IFC approved US\$2.1 billion in financing to 85 projects.

Under IFC operations, all potential projects are subject to an environmental review. In keeping with the procedures of the World Bank, all IFC-backed projects must meet all environmental regulations of the host country. The IFC environmental review considers the following areas, if they are applicable to the proposed project:

- \* Assessment of the baseline environmental situation;
- \* Sustainable use of natural resources;
- \* Pollution controls (liquid effluents and air emissions) and solid and chemical waste management;
- \* Protection of human health, cultural properties, endangered species and sensitive ecosystems;
- \* Use of dangerous substances;
- \* Major hazard assessment;
- \* Occupational health and safety;
- \* Fire and life safety;
- \* Resettlement issues;
- \* Socio-economic issues.
- \* Cumulative impacts of existing projects, the proposed project, and imminent future projects;
- \* Participation of the affected public;
- \* Consideration of environmentally-preferable alternatives;
- \* Efficient production, delivery and use of energy;
- \* Pollution prevention and waste minimization;

Under the IFC, potential projects are grouped in three categories: (a) *Category A Projects*: May result in diverse, significant environmental impacts, and therefore require a detailed EIA. Examples of sectors and projects which are viewed by the IFC as having potentially serious environmental impacts include:

- \* Large chemical and petrochemical plants;
- \* Major oil and gas developments, including large-scale pipelines;
- \* Pulp and paper plants

- \* Logging operations;
- \* Large ferrous and non-ferrous operations
- \* Open pit mining and related processing operations
- \* Large agribusiness and agricultural projects

**Under IFC rules, all projects are subject to EIA review, and fall under three categories of review before a project is cleared.**

- \* Large thermal and hydropower developments
- \* Domestic and hazardous waste disposal operations
- \* All projects which pose serious occupational or health risks
- \* All projects which pose serious socio-economic concerns.

If a proposed project falls under Category A, the site is visited either by a member of the IFC Environment Unit, or a consultant hired by the IFC, to gain first-hand knowledge of the site. The IFC also requires the project to consult with local interested parties and affected groups during the EIA preparation, and make a draft of the EIA available to local interested parties.

(b) *Category B*: Projects which may result in specific environmental impacts, and therefore require compliance with specified performance standards, guidelines or design criteria to ensure mitigation of possible impacts. These projects do not usually require the preparation of a thorough EIA, but an initial environmental analysis must be prepared. Category B projects include:

- \* Medium and small agribusiness and agricultural projects
- \* Electrical transmission projects
- \* Oil and gas pipelines (small scale)
- \* Manufacture of construction materials and cement plants
- \* Fertilizer plants
- \* General manufacturing
- \* Textile plants
- \* Tourism (including hotel projects)

(c) *Category C*: Projects which do not result in



any environmental impact.

### **Environmental Audits**

Environmental auditing first emerged in the United States in the 1970s. It entails a systematic, documented and periodic review of either a company's operations, or a company's management practices, or both, in order to determine whether a company is meeting environmental requirements.

According to 1993 draft guidelines of the ISO *"environmental auditing has already established itself as a valuable instrument for the organization's management to check environmental performance and to help in improvement of that performance. There is a wide and active interest in the development of environmental auditing from a variety of perspectives, including industry, government, the financial community, accounting and legal professions, and environmental professionals, including engineers."*

As a response both to direct liability issues, as well as to decreased asset values of contaminated real estate, lenders are increasingly incorporating environmental audits into standard lending practices, as part of overall due diligence.

The objective of an environmental audit is to determine whether an organization is in compliance with all regulatory, health and safety regulations, as well as in compliance with internal environmental performance standards. In fact, the first objective of environmental audits to determine verification of existing and likely regulations.

Audits are intended to assure management that operations are consistent with good practice; that appropriate environmental monitoring, mitigation and other systems are in place, are functioning as intended, and are documented; that system comply with all legal requirements.

In addition, audits have proven to be a useful tool in improving environmental performance and safety standards; in identifying problem

areas.

### **Types of Environmental Audits:**

*Environmental Management System Audits:* An evaluation of the effectiveness of environmental management systems and environmental performance systems, in complying with stated objectives, and an evaluation as to whether the systems themselves are designed and implemented so as to meet system's goals.

*Compliance Audits:* (i) Regulatory Compliance Audits: An audit of current operations and controls, to determine applicable regulatory requirements, resulting in a statement of the compliance status of the company; and (ii) Performance Audits to determine whether the actual environmental performance conforms with stated objectives.

*Site-Property Audit:* An audit to determine the environmental risk associated with financing, purchase and sale, and for insurance purposes. This is also called a take-over liability audit.

*Audit of an Environmental Statement* to determine whether the contents of an environmental statement is a correct and comprehensive statement of the assessment findings.

As noted above, the most important type of environmental audit is the site-property audit. This provides an assessment of the status of land, buildings, the specific features of individual sites, etc.

Real estate audits also include an inventory of the property; classification of property use (industrial, office, residential, etc); location; age of property; history of ownership and past uses of the property; adjacent property uses; environmental characteristics of the site.

**Property Audits:** A property audit generally comprises of two stages: (1) *Preliminary Survey:* Intended to establish what existing site information is available; to obtain new information from on-site interviews; to visit the



site to inspect the property, etc. The preliminary audit is usually undertaken by a credit officer (2) *Follow-up*: If concern has been raised during the initial survey, follow-up activities include different stages of on-site analysis, including soil, groundwater, adjacent site and other testing; an analysis of mitigation options and potential costs, etc. Secondary considerations, being site-specific, usually require specialist treatment.

*Real Estate Audits*: The scope of an environmental audit is generally a reflection of the size of the loan, as well as the possible extent of environmental problems. After the preliminary stage is completed, and questions remain, a line of inquiry similar to that summarized below, is now followed by many lenders:

*One*, Does the borrower currently own or operate, or has the borrower in the past owned or operated a hazardous waste disposal site? If yes, how and where were the wastes disposed of? Has the company complied with past environmental regulations, and is the company currently in compliance with all waste management and waste emission regulations?

An important source of information is a review of government records, to determine if a company has been involved in regulatory violations. However, past compliance is not usually enough, and lenders need to assess numerous issues, such as the type of land involved: what is the hydrology of the land? Is the land (bedrock) suitable to store hazardous wastes? Are there groundwaters under the site? Will the site affect adjacent residential or agricultural lands?

Is the facility likely to generate hazardous wastes? Are there chemical or hazardous waste materials on site, transported to or from or via the site, which might become involved in a spill or accident?

*Two*, review the ownership history of the land, including current and past uses; machinery and equipment on site; old buildings; asbestos, toxic chemicals or other substances on site.

Lenders should also consider the type of permit(s) that past owners held in relation to the land and facility, as well as the insurance history of the site.

An important question for lenders is whether toxic wastes could occur as a by-product of the borrower's past, current or future activities?

*Three*, Is there a possibility of unauthorized dumping on the site, nearby to the site? Consideration should also be given to nearby sites, to determine if hazardous wastes generated nearby might affect the site.

**Industrial Property Audit**: *One*, review all environmental studies, including compliance audits, insurance assessments, and studies of sub-surface groundwater, well-water and other characteristics.

Obtain the names of all known owners and lessees. Obtain information about the primary products manufactured at the property, as well as the raw materials used, types of industrial processes and abatement equipment used.

*Two*, determine the type and quantity of hazardous wastes generated, as well as industrial chemicals used (PCBs, radon, etc.) Identify waste disposal methods used, as well as the method(s) of transportation. Determine if hazardous wastes are stored, or have stored, on-site for more than 90 days.

*Three*, identify the property's primary sources of air and water emissions. Determine the state of on-site storage and septic tanks, as well as all underground and above-ground storage tanks. Determine the state of waste spill prevention control equipment, and environmental emergency response plans and equipment.

Although the same degree of inspection is not usually required for non-industrial sites, similar methods of audits and inquiries should be made for farms, gas stations, dry cleaning businesses, residential areas, and other real-estate properties. If the credit manager has doubts about possible above or below land



contamination, then a more thorough environmental assessment and environmental audit should be made of the site.

**General Criteria:** In addition to these specific issues, some general steps in an environmental audit include:

(i) *Definition:* The extent to which an audit succeeds depends on whether the objectives have been clarified at the outset; whether the objectives are consistent with management expectations and stated objectives; whether the audit is given enough financing; and whether the importance of the audit is communicated throughout the company.

(ii) *Confidentiality:* It is easier to get employee cooperation, if it is made clear that the input to the audit remains confidential.

(iii) *Scope:* Clear criteria should be established regarding the scope of the audit. For example, what is the geographic scope of the audit (ie. domestic, offshore, out-of-state operations)?; does it involve a review of all past regulatory compliance records?

(iv) *Coverage:* For companies with several operations located at different sites, there is a need to determine the coverage of the audit.

(v) *Auditing Approach:* The approach of the audit, as reflected in the audit design, should conform to the objectives of the company, in order to gauge if internal management systems are meeting regulatory compliance, and whether systems are improving environmental performance.

### **ISO Draft Guidelines**

Under the ISO Technical Committee 207, work is underway to develop international guidelines for environmental auditing. The development of international standards for audit approaches will be an important development for lenders, in terms of international standards directly related to due diligence. The ISO draft guidelines note that although environmental audits and environmental impact assessment

are terms which are used interchangeably, a distinction can be made in terms of the degree of accuracy between the two. The ISO argues that the level of assurance from an audit is higher than an assessment.

As previously noted, the development of ISO standards for environmental audits -- especially site-property audits -- will be of direct importance to lenders. International standards will, for instance, be useful in offshore lending, where national standards are either unclear, or below domestic standards.

In the development of international standards, it is important, however, to note that the ISO is not likely to develop a single, universal auditing standard. Instead, standards will probably work towards some pre-determined systems or minimum criteria. In this regard, the 1993 draft guidelines note that

**Under 1993 draft ISO audit guidelines, property audits are of direct concern to lenders.**

*"an environmental audit should be performed systematically using a predetermined approach, which should not necessarily be uniform, but comparable for similar environmental audits conducted in other situations, to give assurance that the process of obtaining evidence which has been conducted meets minimum standards which are consistent between similar audits. Therefore detailed procedures are required for every type of environmental audit. These detailed procedures only differ where this is essential for a good performance of the specific characteristics of the audit."*

(For more information, see UNEP Industry and Environmental Office Technical Series, Number 2, Environmental Audits, Number 7, Audit and Reduction Manual for Industrial Emissions and Wastes, Number 11, From Regulations to Compliance, and Number 12, Hazard Identification and Evaluation in a Local Community.)



## **Corporate Environmental Reporting**

The accuracy of site audits and project assessments to a large degree reflects the accuracy of information provided to a lender by the borrower, related to environmental compliance and performance. Consensus exists that lenders cannot be, and should be expected, to closely monitor or police the environmental performance of borrowers.

In recent years, a great deal of attention is being focused not only on finding ways to improve environmental performance, but also on improving the way in which environmental performance indicators are chosen, and reported to regulators, lenders, line managers and the public. Various organizations, including UNEP, OECD, the International Institute for Sustainable Development, Business Council for Sustainable Development and others, have increased work on corporate environmental reporting.

Although consensus is far off on what kind of information might be included, suggestions have included: environmental impacts of a product; what and how much pollution the planet/company generates; what the company has done to minimize environmental damages; what still needs to be done to improve environmental performance.

As noted, many large companies have in place a code of conduct or company plan for the environment. Such statements are useful from an environmental perspective, because they help to focus company operations to environmental goals. And they help lenders, by providing an industry-wide gauge of best-practices.

Surveys of industry practices between 1988 and 1992, for example, showed that nearly all large companies surveyed had in place a formal, written environmental policy statement. The statement often committed the company to exceed minimum regulations: in one 1988 survey of 75 firms across a broad industrial spectrum, 60 percent of companies stated that they intended to go beyond compliance, by

committing to more stringent requirements in areas where regulations were considered weak or lacking. Moreover, environmental statements are becoming more specific, focussing on emissions reductions, effluents and wastes.

The gap between promise and performance, however, remains wide. Few countries have reporting standards specifically covering disclosure of environmental management policies. In 1993, only Norway had in place a requirement for Board of Directors in their annual report to disclose the impact their company's operations has on the environment.

**Of 222 transnational corporations surveyed in 1992, only seven disclosed in annual or other reports the extent of their environmental liabilities.**

Thus far, the quality of corporate environmental disclosure has been very poor: in Canada, for example only one percent of all corporate annual reports submitted between 1983 and 1988 contained information of the environment. By the end of the decade, that figure in Europe and North America had jumped to around 60 percent.

However, the kind of information disclosed concentrated on disclosure of environmental policies (70 percent); key environmental improvements (62 percent); and financial impacts on the environment (64 percent). By contrast, only 7 percent discussed remediation of environmental damages (United Nations 1992). And less than 14 percent of environmental performance information was audited.

In the same UN survey, of the 222 transnational corporations surveyed, only seven disclosed the magnitude of their environmental liabilities. The survey concluded that this extremely high lack of disclosure sprang from several sources, including: uncertainty, because environmental liabilities are often seen as a function of changing regulatory requirements.

As regulations become stricter, liabilities become higher. In addition, liabilities are long-term: clean-up time for a hazardous waste site in New Jersey was recently measured at 29 years, with average per year mitigation costs exceeding \$2 million per year. Unclear and longer time horizons often fall far beyond corporate planning horizons of most companies.

(For more information, see UNEP Industry and Environment Office Corporate Environmental Reporting programme; UN Environmental Accounting: Current Issues, Abstract and Bibliography (1992); UN Benchmark Corporate Survey (1991); UNEP Technical Series Number 6, Companies' Organization and Public Communication on Environmental Issues (1992);



**Conclusion:**  
**Selected Environmental Issues**

**New Partnerships**

Each year, detailed analytic reports and prescriptive options are published, outlining a growing list of environmental problems. Useful overview reports include the annual World Resources report; the Environmental Data Report of UNEP; the annual State of the World report of Worldwatch, as well as national environmental reports, NGO environmental reports, and specialized sectoral and regional reports.

In tracking environmental issues, a major challenge for lenders is making sense of environmental issues, their protection against possible risk, and their participation in strategy responses. As noted, lenders continue to place considerable emphasis on monitoring specific environmental issues -- namely, waste treatment, land-fill sites, hazardous waste management.

Even in these areas in which expertise is developing, it is difficult for lenders to sort through detailed scientific, risk analysis and engineering information. This is true, both at the general level, as well as in determining company-specific responses to environmental problems.

The credibility and relevance of information related to environmental performance is therefore vital. Several options have been discussed in recent years, including the establishment, under the UNEP Advisory Group, of an information clearing house, for the exchange of information intended to quantify environmental risk for lenders.

More recently, the *Business Council for Sustainable Development* has increased its work on environmental capital market issues. In addition to assessing work being undertaken by credit rating agencies and the insurance sector in environmental risk, BCSD is also looking at what type of information creditors need, from environmental agencies as well as

in company reporting, in helping them determine and quantify environmental risk.

Considerable work remains in this area. Recent surveys of the financial services sector -- including an extensive survey of environmental management practices in Eastern and Central Europe by the European Bank for Reconstruction and Development, and a recent UNEP-Salomon Inc. survey -- are helping to determine what kind of information the financial services needs in making better choices about environmental management.

**"A great change in our stewardship of the earth and the life on it is required, if vast human misery is to be avoided and our global home on this planet is not to be irretrievably mutilated."**

**Statement by 1670 scientists, including 104 Nobel laureates.**

The purpose of this final section is to list briefly, some of the key issues facing the environmental agenda. Some, such as waste management and chemical safety, are already affecting liability. Others, such as the longer-term insurance and other impacts of climate change, are only now being weighed by lenders.

In listing some of these issues, an important point in the debate about how to resolve banking operations and environmental goals should be stressed. Thus far, lender liability has diverted, or focused too narrowly, the relationship between lenders and environmental policy. From a broader perspective, however, the reason lenders need to become more engaged in finding proactive solutions to environmental problems can be characterized thus:

- (i) problems facing the planet are severe, and moving towards a global crisis;
- (ii) no single party -- be it science, industry, economists, lawyers, governments, NGOs or international organizations, alone has the solutions; and



(iii) as pivotal economic actors, lenders have an important role to play in finding innovative financing responses, and in structuring public-private sector solutions to environmental problems.

Agencies such as UNEP do not advocate closer involvement by banks in environmental issues merely for its own sake. As is evident from activities underway in economics, accounting, law, regulations, and industry innovations, to name but a few, the green agenda is hardly suffering from a lack

**An estimated 1.3 billion people lack access to clean drinking water.**

of participants, or a poverty of possible solutions.

However, the severity of environmental problems demand that new solutions be explored. Clearly, they must engage the expertise and imagination of the financial services community, as partners in future action, rather than as defenders against unfair legal and other decisions involving liability.

### **Some Issues: An Overview**

In April, 1993, 1670 scientists -- including 104 Nobel Laureates -- issued a warning to humanity. Under the banner of the *Union of Concerned Scientists*, they warned that the world's environment was quickly approaching a critical condition, with irreversible damage a growing threat. The scientists warned that fundamental changes were not instigated as a matter of urgency, then humanity would not be able to avoid an environmental collision propelled by unsustainable development.

The scientists cautioned that: *"No more than one or a few decades remain before the chance to avert the threats we now confront will be lost and the prospects for humanity immeasurably diminished."*

Also in 1993, a group of physicians published Critical Condition: Human Health and the Environment, (MIT 1993). They warned that the cumulative effects of air and water pollution, food contamination from pollution;

radiation exposure; depletion of the stratospheric ozone; population growth; climate change and species extinction were directly affecting the health prospects of the entire human population.

Pointing to dramatic jumps in cancer, skin disorders, sterility and other acute human health problems, they warned that changes must be made in response to *"the environmental crisis -- namely that their health and lives, and those of their children, are at stake."*

Below, in point form, is a list of some key environmental issues to which scientists and physicians, as well as environmentalists, policy makers, industry and the public have expressed alarm. The listing does not duplicate account of some global issues, such as ozone layer depletion, outlined in section three above.)

*Population:* Since 1900, the world's population has multiplied more than three times. The current population of 5.7 billion is expected to double by the year 2050. Each year, 100 million more people share the planet's finite resources. The vast majority of population growth -- approximately 90 percent -- is in developing countries. Today, an estimated 1.3 billion people lack access to safe drinking water.

Indications of unprecedented increases in human numbers and demands on the Earth's finite resources are numerous. One example: the consumption of natural resources has jumped dramatically. For example, fossil fuel consumption has risen 50 times in the same period, and industrial productivity by a factor of 50.

Numerous indicators, from changes in the earth's climate, to the build-up of chemicals in the atmosphere, in foods and in drinking water, indicate that we are quickly approaching, and in some cases may already have breached, critical ecological thresholds.

*Food Production:* Per capita food production in Africa declined by 5 percent on average in the last decade, and there are signs of



accelerating soil erosion and land degradation in parts of North America, the result of pesticide over-use and over-capacity.

Over the last 45 years, about 11 percent of the Earth's entire stock of vegetated soils became degraded to the point where the original biotic function has been damaged, reclamation difficult and costly, or in some cases, impossible. Each year, an estimated 25 billion tonnes of productive topsoil are lost, through land degradation, wind and other erosion. An estimated six to seven million hectares of agricultural land is lost each year to erosion.

Today, an estimated one billion people are directly affected by land erosion and desertification.

Estimates suggest that as much as 50 percent of India's land is degraded; 34 percent of Thailand's land; 30 percent in China, and 24 percent in Indonesia. Increasing rates of land degradation undermine agricultural productivity.

*Air Pollution:* Each year, billion of tonnes of sulphur dioxide and other pollutants are pumped into the atmosphere. Today, 900 million people -- most in developing country cities -- breathe air below minimum health standards.

The most serious air pollutants are: sulfur dioxide, nitrous oxide, ozone derived from photochemical smog, carbon monoxide, lead, and particulates (soot and smoke). The most serious sources of air pollution include: domestic heating, electricity generation, automobile emissions, and manufacturing processes.

*Deforestation:* Since 1850, the Earth's forest cover has been reduced from six billion to four billion hectares. Rates of deforestation have risen sharply in the last four decades, especially in developing countries. For example, forest cover in Ethiopia has dropped from 30 percent forty years ago to less than three percent today.

The loss of tropical forests are estimated at 20 million hectares per year. More than 35 percent of Europe's remaining forests are now damaged, dead or dying, the result of acid rain and other pollution.

Estimated losses in timber production because of air pollution: \$23 million.

**Each year, an estimated 25 billion tonnes of productive topsoils are lost to erosion.**

Reforestation rates comparable to deforestation rates (% over %) remain low in Africa, Asia and Latin America, at 0.1/4.1, 2.1/3.9, and 0.4/7.4 respectively. As a whole, the net area planted per annum appeared to represent only 12% of that felled every year.

*Biodiversity:* Each day, an estimated 50 to 100 species become extinct, because of deforestation, urban expansion, pollution and habitat loss.

*Marine Pollution:* Between 1979 and 1991, total marine fish catch in 17 marine areas increased by 25 percent between. Evidence suggests that in six major marine areas, fishery yields are on the decline. Along the eastern seaboard of North America, cod stocks appear to have collapsed.

Land-based sources of marine pollution, through sewage emissions, nutrient run-off, garbage, industrial effluent, sludge and other pollutants are believed to increased natural amounts of dissolved nitrogen and phosphorus entering coastal areas by between 50 and 200 percent.

Some 15 million tonnes of nitrogen and one million tonnes of phosphorus are fed naturally from rivers into the oceans. By comparison, waste emissions are estimated at between 7 and 35 million, and 0.6 and 3.75 million tonnes respectively.

*Freshwater:* In recent decades, freshwater use has been expanding at between 4 and 8 percent per annum. Despite population growth rates in



developing countries, most of this expansion in freshwater use has taken place in developed countries. Industry in OECD economies commits an estimated 90 percent of total discharges of toxic substances. Five industries -- chemicals, paper, petroleum, textile and primary metals -- accounted for over 90 percent of toxic discharge in freshwater in the US, discharging an estimated 4,355 billion kg's into water supplies.

**The Government of Poland estimates that it will cost \$260 billion over 20 years to clean up the environmental mess.**

*Chemicals:* Some 100,000 chemicals are believed to be in regular use, although approximately 3,000 account for 90 percent of total chemical uses. Adequate toxicological data has been

produced for only a small fraction of existing chemicals. Three new chemicals are introduced each day. Since 1940, synthetic materials in human society has risen by more than 350 percent.

World fertilizer use rose from 14 million tonnes in 1950, to 143 million tonnes in 1989. Eutrophication is estimated to affect roughly 40 percent of the world's lakes and reservoirs.

*Climate Change:* In the last 40 years, annual emissions of carbon dioxide -- the main "greenhouse gas" -- have jumped by 27 percent. Atmospheric concentrations of carbon dioxide have increased 27 percent in the past century. Concentrations of methane have risen by 150 percent.

*Energy:* Energy demands to meet the development needs of a rapidly growing population lie at the heart of the environmental agenda. The World Energy Council estimates that energy demand will rise by between 50 and 75 percent between 1985 and 2020.

The last two decades has seen enormous increases in the consumption of commercial energy. Estimates range from an increase of 50 to 60 percent. The vast majority of this energy demand -- roughly 90 percent -- is derived

from fossil fuels.

Industrialized countries consume three times as much commercial energy as developing countries, and 10 times as much on a per capita basis. In the last twenty years, coal demand for commercial energy use has tripled in developing countries.

Coal, the dirtiest of fossil fuel sources, accounts for 45 percent of developing country energy supply. In transition economies of eastern Europe, coal is the major source of domestic heating: in Poland it provides 47 percent of domestic fuel, and in Hungary, 75 percent.

*Eastern and Central Europe:* In light of the enormous waste contamination, severe pollution and other problems facing the region, the situation facing countries in the region has been termed an ecological catastrophe.

Human health indicators for heart, respiratory, birth defects and other problems show, for example, an alarming deterioration in health standards linked to pollution in recent years. The legacy of Chernobyl; the contamination of million of hectares of land by industrial wastes; the continuation of massive air and other pollution; are just some of the acute problems faced in the region.

In response, governments and international organizations are concentrating on clean-up actions. The Ukraine alone estimates that it is allocating 20 percent of GDP on clean-up projects. The Government of Poland estimates that it will cost \$260 billion over the next 20 years in environmental clean-up actions.

Although the post-communist investment predictions focused on the likely input of huge capital investment in the CIS countries -- including investment in TNCs with off-the-shelf environmental technologies, large scale western investment remains tentative, the combination of recession at home, uncertainty, and other problems.

*Swaps:* However, innovative solutions



involving the private sector, together with public institutions like the EBRD, World Bank, EC PHARE programme, the IFC and bilateral development finance, are emerging, to examine new solutions to finance the enormous clean-up required.

One option, which first emerged from the private sector in the late 1980s to help finance conservation projects in Central America, is the expansion of debt-for-nature swaps to help finance pollution remediation project.

In Poland, for example, several innovative debt-for-environmental swaps have already taken place. As of January 1994, for example, the following swap agreements had been made:

\* United States (1991) -- 10 percent of total debt -- swap value: \$360 million;

\* Switzerland (1993) -- 10 percent of total debt -- swap value: \$52 million;

\* France (1993) -- one percent of debt: swap value: \$48 million;

\* Finland (1990) -- 10 percent of debt; swap value: \$17 million.

Problems facing other regions, including Asia Pacific, Latin America and Africa, are each distinct, and equally demand new and innovative solutions, involving the private as well as public sector.

**Information:** For more information on regional, global and other environmental problems, including environmental data and legislative and other responses, please contact UNEP. For more information on environmental programmes in your region, please contact the following:

African Development Bank  
Central Projects Department  
01 B.P. 1387  
Abidjan, Cote d'Ivoire  
Tel: (22 5) 20 40 52  
Fax: (22 5) 20 49 07

Arab Bank for Economic Development in Africa  
P.O. Box 2640  
Khartoum  
Tel: 73645/73646/73647  
Fax: 22739

Asian Development Bank  
Office of the Environment  
P.O. Box 789  
Manila, Philippines 2800  
Tel: (632) 632 6717  
Fax: (632) 741 7961

Caribbean Development Bank  
Social Development  
P.O. Box 408  
Wilkey, St. Michael  
Barbados  
Tel: (1 809) 431 1600  
Fax: (1 809) 426 7269

European Bank for Reconstruction and Development  
One Exchange Square  
London EC2A 2ED  
United Kingdom  
Tel: (44 71) 338 6567  
Fax: (44 71) 338 6100

European Investment Bank  
100, Blvd. Konrad Adenaur  
Luxembourg-Kircherg  
L-2950 Luxembourg  
Tel: (352) 4379 6466  
Fax: (352) 4379 6476

Inter-American Development Bank  
1300 New York Ave., N.W.  
Washington, D.C. 20577  
USA  
Tel: (1 202) 623-3283  
Fax: (1 202) 623-1304

The World Bank  
1818 H. Street, N.W.  
Washington, D.C. 20433  
USA  
Tel: (1 202) 477 1234  
Fax: (1 202) 477 6391

## **APPENDIX A:**

### **Banking and the Environment A Statement by Banks on the Environment and Sustainable Development**

**Foreword:** We, the undersigned, believe that human welfare, environmental protection and sustainable development depend on the commitment of governments, businesses and individuals. We recognize that the pursuit of economic growth and a healthy environment are inextricably linked. We further recognize that ecological protection and sustainable development are collective responsibilities and must rank among the highest priorities of all business activities, including banking. We will endeavor to ensure that our policies and business actions promote sustainable development: meeting the needs of the present without compromising those of the future.

#### **(1) General Principles of Sustainable Development:**

- (1.1) We believe that all countries should work towards common environmental goals.
- (1.2) We regard sustainable development as a fundamental aspect of sound business management.
- (1.3) We believe that progress towards sustainable development can best be achieved by working within the framework of market mechanisms to promote environmental protection. We believe that there is a role for governments to provide the right signals to individuals and business, to promote behavioral changes in favor of effective environmental management through the conservation of energy and natural resources, whilst promoting economic growth.
- (1.4) We regard a versatile, dynamic

financial services sector as an important contributor towards sustainable development.

(1.5) We recognize that sustainable development is a corporate commitment and an integral part of our pursuit of good corporate citizenship. We are moving towards the integration of environmental considerations into banking operations and business decisions in a manner which enhances sustainable development.

#### **(2) Environmental Management and Banks:**

- (2.1) We subscribe to the precautionary approach to environmental management, which strives to anticipate and prevent potential environment degradation.
- (2.2) We expect, as part of our normal business practices, that our customers comply with all applicable local, national and international environmental regulations. Beyond compliance, we regard sound environmental practices as one of the key factors demonstrating effective corporate management.
- (2.3) We recognize that environmental risks should be part of the normal checklist of risk assessment and management. As part of our credit risk assessment, we recommend when appropriate environmental impact assessments.
- (2.4) We will, in our domestic and international operations, endeavor to apply the same standards of environmental risk assessment.
- (2.5) We look to public institutions to conduct appropriate, up-to-date and comprehensive environmental assessments in ventures with them, and to share the results of these assessments with participating banks.
- (2.6) We intend to update our



management practices,including accounting,marketing,public affairs,employee communications and training,to incorporate relevant developments in environmental management.We encourage banking research in these and related issues.

(2.7) We will seek to ensure that in our internal operations we pursue the best practices in environmental management,including energy efficiency,recycling and waste minimisation.We will seek to form business relations with suppliers and sub-contractors who follow similarly high environmental standards.

(2.8) We support and will develop suitable banking products and services designed to promote environmental protection,where there is a sound business rationale.

(2.9) We recognize the need to conduct internal environmental reviews on a periodic basis to measure our operational activities against our environmental goals.

### **(3) Public Awareness and Communication**

(3.1) We will share information with customers,as appropriate,so that they may strength their own capacity to reduce environmental risk,and promote sustainable development.

(3.2) We will foster openness and dialogue relating to environmental management with all relevant audiences,including governments,clients,employees,shareholders and the public.

(3.3) We recommend that banks develop and publish a statement of their environmental policy and periodically report on its implementation.

(3.4) We ask the United Nations

Environment Programme to assist the industry by providing,within its capacity,relevant information relating to sustainable development.

(3.5) We will periodically review the success in implementing this Statement and will revise it as appropriate.

(3.6) We encourage other banks to support this Statement.

## The United States Superfund Process

In 1984, the United States federal government initiated a program to deal with the numerous hazardous waste sites around the nation. The Comprehensive Environmental Responsibility and Cleanup Liability Act, or CERCLA, was enacted to provide a mechanism for federal money to be used for hazardous clean-ups to progress even while the government sought to recoup the funds expended from the responsible party(ies). This process is referred to as Superfund.

The Superfund process allocates federal money each year for clean-up projects. Superfund sites were originally selected and ranked according to degree of hazard on the National Priorities List (NPL). Subsequently, sites have been added and the list has been re-ranked, however, in the interim, individual sites progress through the clean-up process.

A site is generally listed when there is some sort of local complaint or a discharge occurs. Usually local health departments respond, and then depending upon the severity, the U.S. Environmental Protection Agency (USEPA) is called to make further evaluations. Depending upon the outcome of these evaluations, a site may become a "listed" site, and be placed on the NPL to await further action. This listing requires advertisement in the Federal Register as part of the procedure. Generally, the lower the site's rank, the more readily its problems are addressed. Sometimes political pressure can come into play in order to get a more highly ranked site cleaned up before a lower ranking site.

Once the USEPA decides to act upon a site, it begins with a Preliminary Remedial Investigation. In this stage, the contaminants are identified, as well as the degree of contamination. From that stage, a Remedial Investigation/Feasibility Study (RI/FS) is performed. This entails a more detailed assessment of the site

and identifies various methods of remediation with a recommendation of which alternative is the most cost effective.

Based upon the RI/FS the federal government, in conjunction with the appropriate state government, prepares a Record of Decision (ROD), which identifies the selected alternative and outlines responsibilities and rough time frames for the clean-up. The degree of involvement of the state government is contingent upon the type of remediation to take place. Some smaller sites stay entirely within the purview of the federal government and do not require any long term operations and maintenance (O&M), while others need extensive O&M in the range of 30 years. Federal law requires the state to undertake the long-term O&M portion of the clean-up in order for the federal government to take on the construction costs. The state's signature on the ROD ensures that it will be responsible for any post construction O&M.

In order to facilitate the remediation, the federal government will hire a consultant to prepare the remediation specifications, and then bid the project to a construction contractor, which undertakes the work. Depending upon the size of the project, construction can take anywhere from one to five years, and costs can range from several hundred thousand dollars to upwards of \$100,000,000. Once the construction has been completed, the federal government turns the site over to the state for long-term O&M.

An example of a large scale remediation undertaken by the federal government is the Helen Kramer Landfill in New Jersey. This site operated as a landfill from 1965-1981 and was situated in a rural farm area of southern New Jersey. Waste was accepted from a variety of generators, but included drummed chemicals. In 1981, the landfill operations were ordered to cease by the state, and the federal government put the



site on the Superfund list. An RI/FS was completed on the site in 1988 and a ROD was signed between the federal government and the state shortly thereafter. Construction of the remedial action (RA) began in 1989.

The RA consisted of leaving the waste in place and covering it with an impermeable cap; installation of a leachate collection and treatment system; as well as a gas flare to incinerate the landfill gases. The total cost for the construction phase of this project is approximately \$115,000,000. The plant has just entered the O&M phase under the state's purview and will likely remain in O&M for another 29 years. The annual O&M cost budgeted by the state is \$2,200,000.

As mentioned, some O&M can run for 30 years. This is due to the fact that many sites are old landfills and regulations require that after proper closure they be monitored for 30 years. Monitoring and actual O&M activity are not always synonymous. In fact, if the targeted clean-up levels are reached in less than 30 years, O&M activities may cease. Conversely, if the targeted clean-up levels are not reached in 30 years, O&M may have to continue beyond the 30 year mark. These situations are purely hypothetical at this point, as no site has reached the 30 year mark to date.

This previous description of Superfund is only one aspect of the legislation. The other aspect which potentially involves creditors, is the cost recovery from the potential responsible parties (PRPs). The optimum situation is where the PRP performs the entire remediation and there are no remediation costs attributable to the government. Clean-up levels are usually set up through a consent decree or a memorandum of agreement between the government and the PRP. That way the government can monitor the progress of the PRP and make sure the work is being performed. Should the PRP default on this agreement, the government can then step in and complete the job.

In the event that no PRPs step forward, or the available PRPs do not have the appropriate funding to perform the remediation, the government is likely to institute lawsuits in order to recover any funds expended for the clean-up. In the case of landfills, there are usually a variety of PRPs available to the government to bring action against; such as generators, haulers, owners and operators. Under Superfund, each party is jointly and severally liable for any waste which is contributed to the site. Much time and money is spent by both the government's attorneys and the PRP's attorneys arguing over liability. When there are multiple PRPs, much time is spent trying to determine each one's appropriate share of the clean-up.

Many cases are resolved through negotiations, whereby concessions are made by both sides and the result may be that the PRPs either pay for or perform the remediation themselves. The government may concede a portion of the costs expended in order to get the PRPs to complete the task.

In 1996, Superfund is due for re-authorization by Congress. There has been considerable discussion regarding what form Superfund may take concerning liability and the processes by which liability will be determined. For example, an option is a theory that the responsibility of determining the universe of PRPs will rest solely with the government. Currently, the government need only identify one PRP for joint and several liability and that PRP would need to conduct the appropriate research to locate other PRPs. By requiring the government to perform this background research, the universe of PRPs is already determined and the parties can then focus on allocation of cost. Another area being considered is allowing for de-micromus exemptions and early de-minimus settlements according to percentage of cost.

