Environmental Management Systems and Community Participation: Rethinking Chemical Industry Regulation

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I.
INTRODUCTION

This article provides a brief introduction to the chemical industry, its economic contribution, and its environmental problems. The article identifies the key features of the industry that are likely to influence the possibilities for regulatory design. The main components and limitations of current regulatory regimes in North America, Western Europe and Australia are summarized. The main task of the article is to highlight the design of regulatory policy in harnessing a broader mix of instruments and institutional actors that are tailored to the particular circumstances of the chemical industry.

The problems focused upon are necessarily a subset of the environmental problems confronting the chemical industry as a whole. Point-source pollution and chemical accidents, have been the major environmental concerns with which the industry is associated.[1] The chemical industry is, by a large margin, the most polluting industry sector both in the United States and in a number of other countries. Solutions to problems in the chemical industry have resonance far beyond the chemical industry itself.

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1. For an excellent policy analysis of the latter, see Jim Potter, *Chemical Accident Prevention Regulation in California and New Jersey* 20 ECOLOGY L.Q. 755 (1993).

II.

THE CHEMICAL INDUSTRY AND THE ENVIRONMENT

The chemical industry,[2] is a key manufacturing sector in most of the industrialized world. It transforms natural raw materials, such as metals, minerals, coal, oil, natural gas, vegetable oils, and animal fats, into thousands of organic chemicals for commercial use. The chemical industry produces tens of thousands of products including raw and basic or intermediate materials for other industries, and finished products for industry, construction, service, agriculture, business, and individual consumers.

During the early part of the 20th century, the industry expanded into explosives, synthetic dyes, pharmaceuticals, and petrochemicals, and diffused chemical industry products into many other industrial sectors. In so doing, it has come to play a dominant role in the manufacturing sector of most developed and many developing countries. More recently, the industry's trend is away from bulk chemicals towards higher added value products including pesticides, herbicides, dyestuffs, and biotechnology applications.

Almost all of the largest chemical companies are transnational. Most of these companies expanded from their original base in North America or Western Europe to establish substantial foreign subsidiaries. This expansion was particularly evident from the second half of the 1980's until the 1991 - 1992 recession, during which period companies opened new markets and built new

2. No classification satisfactorily defines the absolute limits of "the chemical industry" and national and international industrial classification schemes differ. See for example REDUCING TOXICS: A NEW APPROACH TO POLICY AND INDUSTRIAL DECISION MAKING 221 (Robert Gottlieb ed., 1995) [hereinafter REDUCING TOXICS]. Chemical and Engineering News, a leading trade journal published by the American Chemical Society, uses the following categories: organic chemicals; inorganic chemicals; minerals; synthetic fibers; synthetic rubbers; plastics; fertilizers; pesticides; coatings; and aerosols (by end category such as personal products, and insect sprays) to encompass the industry. This classification does not include "products of oil companies" and minerals which have little or no chemical industry application. *Id.* at 225.

A useful working definition is that of industrial activity embracing any industrial process in which a basic chemical change/reaction takes place, or in which chemistry is used and chemicals are produced. The industry can be divided into two sub-sectors: "heavy" (basic chemical sectors engaged in manufacturing the basic inorganic and organic commodity chemicals) and "light" (clustered according to end products such as soaps and detergents, dyes, pharmaceuticals, explosives, rubber, plastics and resins, manmade fibres, paints and varnishes, and the paper industry. This classification includes organic industrial minerals production (mining) and processing (primarily associated with fertilizer production) within the chemical process industries. REDUCING TOXICS, *supra* note 2, at 222.

plants, especially in the Asia-Pacific region. During the same period world gross output in chemicals grew from US $744 billion to US $1.136 trillion.[3] The industry also includes many smaller operators. These include specialty chemical manufacturers, distributors, and others to whom chemicals are supplied (e.g. upstream suppliers and buyers for manufacturers downstream).

The chemical industry is a keystone of the U.S. economy. It is also a leading industry in Western Europe, where it accounts for an estimated one-third of the world turnover of chemical production and thirty-seven percent of the total European trade balance of manufacturing.[4] In Australia, the chemical industry similarly plays an important role, both as a key supplier of raw materials to the overall manufacturing industry and to key export industries such as agriculture and mining.

The chemical industry is a major source of environmental pollution. It is the United States' largest consumer and generator of highly toxic chemical substances.[5] Roughly half of all releases and transfers reported through the Toxic Release Inventory ("TRI"), and eighty to ninety percent of hazardous waste generation reported through the Resource Conservation and Recovery Act, can be attributed to the industry.[6] These figures represent three times that of the next major contributor to pollution - the metal industry. The U.S. chemical manufacturing facilities also

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3. CHEMICAL INDUSTRIES COMMITTEE, INTERNATIONAL LABOUR ORGANISATION, RECENT DEVELOPMENTS IN THE CHEMICAL INDUSTRIES 10 (1995).

4. Since the recession of the early 1980s, chemical industry production has expanded by 52%. The industry produces over 70,000 different products and in 1994 employed 1.06 million people, 5.9% of the manufacturing total. The U.S. chemical industry, however, is the world's largest. In 1993, 18 out of 30 world chemical majors had their headquarters in Western Europe. The center of gravity of the chemical industry in Europe remains in Germany, but most European countries, in Western and Eastern Europe, have internationally significant chemical industries. In financial terms the leading countries include Germany, U.K., France, Italy, Netherlands, Switzerland and the Czech Republic. The European Union boasts approximately 33,000 enterprises involved in chemical production. Approximately 98% of these have fewer than 500 employees and, classified as small or medium enterprises, take 44% of the turnover of the industry and employ 39% of the total workforce. European Chemical Industry Council (visited November 1996) <http://www/innet.net/cefic/cgi-bin>.

5. REDUCING TOXICS, *supra* note 2, at 210. According to the EPA Toxic Release Inventory ("TRI"), the US emits about 20 billion pounds of toxic chemicals annually into the environment. *See* BARRY COMMONER, MAKING PEACE WITH THE PLANET 31 (1990). However, according to Congress's Office of Technology Assessment, because of under reporting and the omission of data from small establishments, this figure is more likely to be about 400 billion pounds.

6. *See* U.S. ENVIRONMENTAL PROTECTION AGENCY, 1993 TOXIC RELEASE INVENTORY PUBLIC DATA RELEASE 60 (Mar., 1995).

dominate the list of individual facilities ranked highest for the largest total emissions of hazardous waste.[7] Worldwide the chemical industry has an equally disturbing environmental profile.[8]

The industry is not only a very substantial contributor to point-source toxic chemical pollution but is also, in its capacity as a supplier of intermediate products to other sectors, the most important developer/vendor of toxic chemical products. Although the latter role has not received significant attention, the chemical industry is a contributor to ozone layer depletion and the enhanced greenhouse effect. Its activities have implications for toxic waste management, the transportation of hazardous materials, and the safety of foodstuffs.[9] Finally, the threat of accidents and explosions exists at chemical facilities. These events can inflict serious damage on local communities as well as on the broader environment.

The threat of such damage, and the consequences of dramatic and highly publicized chemical accidents, evoked public outcry and industry response.[10] For example, in 1984 at Bhopal in India, at least 2,000 people died and approximately 200,000 were injured when twenty tons of lethal methyl isocyanide escaped from a Union Carbide chemical plant.[11] A number of other serious accidents have occurred in a wide range of other countries.[12] Re-

7. In 1991, of the top 50 facilities, more than two-thirds were related to the chemical industry and accounted for almost 40% of the total releases and transfers. REDUCING TOXICS, *supra* note 2, at 212.

8. The Commission of the European Union estimates that environment related expenditure in 1992 amounted to 3.5% of the turnover of the chemical industry in the E.U. INTERNATIONAL LABOUR OFFICE, RECENT DEVELOPMENTS IN THE CHEMICAL INDUSTRIES 34 (1995).

9. Since the toxic chemicals emitted into the environment occur in air, drinking water and food, they readily enter the human body, threatening human health.

10. REDUCING TOXICS, *supra* note 2, at 211. Across the globe, there have been numerous industrial catastrophes involving chemical industry installations. Neil Gunningham, *Environment, Self-Regulation, and the Chemical Industry: Assessing Responsible Care*, 17 LAW AND POL. 57 (1995) (see details of accidents internationally at 59-60). *See also* S. TOMBS, *The Chemical Industry and Environmental Issues*, in BUSINESS AND THE ENVIRONMENT: IMPLICATIONS OF THE NEW ENVIRONMENTALISM 132 (Dennis Smith ed. 1993).

11. PAUL SHRIVASTAVA, BHOPAL: ANATOMY OF A CRISIS (2nd ed. 1992).

12. Amongst these, are incidents in Seveso, Italy, in 1976, Pasadena, Texas, in 1989 and at Sterlington, Louisiana, in 1991. Similar accidents occurred in Klong Toey, Thailand, in 1991; Hesse, Germany, in 1993; and Shenzhen, China, in 1993. *See generally* JOHN WITHERS, MAJOR INDUSTRIAL HAZARDS: THEIR APPRAISAL AND CONTROL (1988). *See also* CHEMICAL INDUSTRIES COMMITTEE, INTERNATIONAL LABOUR ORGANISATION, RECENT DEVELOPMENTS IN THE CHEMICAL INDUSTRIES 27 (1995).

sponding to public concern, both about point-source emissions and accidents, the chemical industry has significantly improved its environmental performance during the last decade. Since 1987 the United States chemical industry claims to have reduced releases of toxic chemicals to the environment by forty-nine percent.[13] The industry has also reduced disposal in deep wells by forty-six percent and off-site transfer for treatment and disposal by fifty-six percent. A survey by the United States Chemical Manufacturers Association ("CMA") showed reductions by its member companies of sixteen percent for releases, fourteen percent for underground injection, and twenty one percent for transfers - excluding transfers for recycling and energy recovery.[14] The industry claims that its environmental control actions have necessitated capital expenditures for pollution abatement and control totaling over US $22 billion since 1973.[15] The U.S industry claims that total chemical industry pollution abatement spending in 1993 was US $4.4 billion. In the year 2000, the CMA, using Environment Protection Agency ("EPA") figures, estimates that the industry will spend roughly $6 billion in complying with environmental regulations.[16]

European chemical companies have similarly responded to environmental concerns with substantial expenditure on improved environmental performance. The Commission of the European Union estimates that environment related expenditures in 1992 amounted to 3.5 percent of the turnover of the chemical industry in the European Union.[17] In the United Kingdom the share of capital spending on environmental protection rose from eight

13. CHEMICAL MANUFACTURERS ASSOCIATION, FACT SHEET: CHEMICAL INDUSTRY HALVES TOXIC RELEASES (1996).

14. Based on 1993 figures. CHEMICAL MANUFACTURERS ASSOCIATION FACT SHEET: CHEMICAL INDUSTRY HALVES TOXIC RELEASES (1996). *See also* CHEMICAL MANUFACTURERS ASSOCIATION, RESPONSIBLE CARE PROGRESS REPORT, THE YEAR IN REVIEW, 1995-96 5-7 (1996).

15. CHEMICAL MANUFACTURERS ASSOCIATION, U.S. CHEMICAL INDUSTRY STATISTICAL HANDBOOK 1995 107 (1995).

16. Lois Ember, *Overhaul of Environmental Law Needed for Sustainable Development,* CHEMICAL AND ENG'G NEWS, March 15, 1993, at 17 (interviewing E.D. Elliott and E.M. Thomas, authors of *Chemicals* in SUSTAINABLE ENVIRONMENTAL LAW (Celia Campbell-Mohn, et al. eds. 1993) (1993).

17. INTERNATIONAL LABOUR ORGANISATION, CHEMICAL INDUSTRIES COMMITTEE, RECENT DEVELOPMENTS IN THE CHEMICAL INDUSTRIES 34 (1995).

percent in 1990 to fourteen percent in 1992.[18] The pattern of expenditure in Australia is similar.[19]

III.

CHARACTERISTICS OF THE CHEMICAL INDUSTRY

The chemical industry has a number of important characteristics crucially important to designing an appropriate regulatory regime. First, most chemical industry pollution is point-source pollution (e.g. from smokestacks or other discharge points) or is the result of chemical accidents. Both sources are readily identifiable by regulators and the community. It is accordingly difficult for the industry to deny the connection between its activities and the environmental consequences of these activities. It is also relatively easy for regulators to monitor and take action against unlawful emissions or other illegalities by chemical companies.

Second, there are many differences among chemical producers. These differences have considerable implications for regulatory design. The limited number of large, mostly transnational companies, is the dominant group. These companies all have high public profiles and reputations that are important for them to protect. As such, they are extremely vulnerable to adverse publicity, to shaming at the hands of public interest groups and others, and to other informal sanctions beyond those imposed by conventional command and control regulation. However, a large number of smaller players are also involved in the industry. They are particularly difficult to regulate. These players essentially fall into two groups, with some limited overlap: (i) the specialty chemical manufacturers (usually producing small volumes of a wide variety of specialty chemicals as demand dictates); and (ii) the distributors, suppliers, and buyers of wholesale chemicals. These groups have very different characteristics from the large companies and are likely to respond to very different pressures and incentives. Significantly, with the exception of some distributors and specialty chemicals companies, they are commonly unsophisticated and in some cases economically marginal. In most

18. European Chemical Industry Council, *supra* note 4.

19. For 1995 the chemicals sector quoted an expenditure of approximately US $77 million for the purposes of pollution control and general environment improvements. This figure included a capital spending of approximately US $40 million and in total represented a 10% increase on spending in this area in 1994. RUST PPK, INTERNATIONAL BEST PRACTICE IN HEALTH, SAFETY AND ENVIRONMENT REGULATION IN THE CHEMICALS AND PETROLEUM INDUSTRIES (1995).

cases they trade with, and are to some extent dependent on, the large companies.[20] Both groups of small players present particular problems to regulators.[21]

Third, the long-term viability of the industry probably depends (and is perceived by most large companies to depend) upon gaining and maintaining the public's trust. At present, the entire chemical industry suffers from a negative public image. This image can only be improved (and with it the long term fortunes of the industry itself) by a substantial improvement in the environmental performance of the industry as a whole. Given the transparency of chemical industry pollution, described above, only demonstrable environmental performance, and not merely better public relations, can deliver improved public trust and credibility.

Fourth, the industry itself is mature and stable. Similarly, given the substantial environmental problems generated by the industry, it was one of the first industry sectors to be subject to regulation, and thus the regulatory regime that oversees its environmental performance is also a mature one.[22] That regime is also very extensive and the industry is highly regulated across a variety of environmental media.

Fifth, and related to the last point, there is, in each of the major jurisdictions, a strong industry association with the capacity to exert considerable influence over the behavior of its member companies. Indeed, for some years, in most developed countries, the industry association has already performed such a role.[23] Each industry association is acutely aware that to the extent it does not put its own house in order in environmental terms, there will be heavy pressure on government to do so. Since government has already regulated the chemical sector for many years, and there is substantial public support for more stringent regulation, there are arguably few obstacles to ratcheting up the severity of that regulation.

Sixth, the threats caused by chemical industry pollution are likely to inflict damage not only on the natural environment but

20. In recent years the large companies have contracted out more work to fewer firms. As we shall see, the buyer-supplier relationship provides substantial opportunities for the large companies to impose pressures on their smaller trading partners to improve their environmental standards.

21. *See infra* pp. 29-30.

22. *See infra* pp. 12-13.

23. *See, e.g.*, Jurgen F. Franke & Frank Watzold, *Voluntary Initiatives and Public Intervention - The Regulation of Eco-auditing, in* ENVIRONMENTAL POLICY IN EUROPE 179-181 (Francois Leveque, ed. 1996).

also on human health, with the result that a broad range of groups might potentially be mobilized to counter such pollution. For example, environmental Non-Government Organizations ("NGOs"), local communities living downwind or downstream from chemical complexes, and perhaps also trade unions, have a substantial active interest in curbing harmful emissions. The overlap between occupational health and safety and environmental protection in the chemical industry (for example, what is toxic when emitted outside a plant may also be toxic to workers within it) further enhances the potential for common cause between trade unions and environmentalists.[24]

Seventh, the chemical industry is driven by innovation and technological change, which many regard as its very lifeblood.[25] Moreover, processes within the industry are heterogeneous, being so varied and complex as to make sector-wide standards difficult to establish. What is appropriate for large plants may not be appropriate for small ones, what is appropriate for batch chemicals will not be appropriate for continuous processes. Where sector-wide standards are established, they can have a stultifying effect.[26] As a result, a high priority of innovative individual companies and the industry association is to avoid prescriptive regulation or other intrusions into its affairs that might inhibit innovation.

IV.
THE REGULATORY ENVIRONMENT

Current strategies for addressing point-source pollution by chemical manufacturers necessarily vary from jurisdiction to jurisdiction according to the political, economic and cultural characteristics of individual countries. This article does not attempt to engage in a detailed description of such regimes, but instead identifies their main features, and their strengths and limitations,

24. Though to date there are extremely few concrete examples of such common cause.

25. *See, e.g.,* Ronald Brinkman et al., CONTROLLING CHEMICALS: THE POLITICS OF REGULATION IN EUROPE AND THE UNITED STATES 221 (1986) [hereinafter Brinkman].

26. For example, in the U.K., attempts to apply the new regime of Integrated Pollution Control to the fine and contract chemicals sector (which is characterized by complex, multi-purpose batch plants set up to make products on short notice) has led to problems concerning the requirement that each chemical process obtain a separate authorization. See K. ALLOTT, INTEGRATED POLLUTION CONTROL: THE FIRST THREE YEARS, ENVIRONMENTAL DATA SERVICES xiv (1994).

as a necessary precursor to the main theme: how chemical industry regulation might be redesigned to optimal effect.

This preliminary task need not be an arduous one. Regulation of the chemical industry in almost all developed countries has depended heavily (though not exclusively)[27] on various forms of command and control. Moreover, in many cases that regulation is comparable to other industrial sectors (though the trend is towards a sector-specific approach).

Governments, throughout Western Europe and North America, have relied heavily on a regulatory standards approach involving the establishment of technology-based standards for classes of industries or scheduled premises, or some combination of the two. In the U.S., where command and control approaches are most entrenched, the main environmental statutes require permitted facilities to install "best conventional pollutant control technology" or "best practical control technology currently available". The advantage of this approach is in providing "a measure of environmental quality certainty" (provided there is adequate monitoring and enforcement) that may be particularly important when potent and toxic substances are being released into the ambient environment.[28] However, it is inherently biased against technological innovation which, from an industry perspective, is very unattractive, and provides little ongoing incentive for continuous improvement.

Chemical manufacturing is a complex process involving rapid technological change. Since technological processes can quickly become outdated, it is not well suited to the imposition of highly prescriptive legislation. Similarly, current uniform standards fail to acknowledge differences among chemical producers, given that technological capacity and sophistication necessarily vary with size and operational circumstances,[29] and impose considera-

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27. For example, in the United States there is still some residual reliance on common law doctrines to prevent unreasonable air pollution emissions, enforced through civil suits based on personal injury or property damage. Such liability rules remain a singularly unsatisfactory way of addressing pollution problems. *See* Arnold W. Reitze Jr., *A Century of Air Pollution Control Law: What's Worked; What's Failed; What Might Work*, 21 ENVTL. L. 1549, 1554-69 (1991).

28. ECONOMIC INCENTIVES AND ENVIRONMENTAL POLICIES: PRINCIPLES AND PRACTICE 17 (Hans Opschoor & Kerry Turner eds. 1994).

29. Eco-efficiency Task Force, Chemical Operations Team of the President's Council on Sustainable Development, *Proposed Policy Recommendations for the Chemical Industry* (1995). *See also* Daniel J. Fiorino, *Towards a New System of Environmental Regulation: The Case for an Industry Sector Approach*, 26 ENVTL. L. 457, 469 (1996).

ble excess costs without providing demonstrable additional environmental benefits.

The traditional command and control approach is widely criticized for being too expensive, for interfering too much with private initiative, and for having too many unintended consequences.[30] In the U.S. these problems are exacerbated by medium-specific statutes that provide incentives simply to transfer hazards from the most highly regulated to the least regulated medium, in essence encouraging a "toxic shell game." In that country, where the regulatory regime is also characterized by hostility, distrust, and adversarialism, a further result has been a "progression towards more costly, detailed and intrusive forms of regulation."[31]

Recent experiments intended to transcend these problems provide some exceptions to this characterization of chemical industry regulation. These include attempts to provide greater flexibility and encourage innovation. These efforts have received a mixed reception; praised by some for overcoming regulatory rigidity and for encouraging pollution prevention and criticized by others for neither going far enough nor for confronting the central problems of the traditional system.[32] The jury is still out on these initiatives. Exhortations from bodies such as the President's Council on Sustainable Development's Chemical Operations Team for the greater use of economic incentives, self-auditing, and risk-based standards are also only slowly and partially eliciting responses.[33]

For example, although much has been written about economic incentives as an alternative to command and control, they have so far been used only to a very limited extent. The most obvious example is the acid rain allowance trading provisions of the 1990

30. *See generally supra* note 29 (noting that "air, water and waste issues are managed nationally, and in most states as separate programs," under statutes which do not distinguish chemical sector emissions from those of other industries).

31. Eugene Bardach & Robert A. Kagan, GOING BY THE BOOK: THE PROBLEM OF REGULATORY UNREASONABLENESS 20 (1982).

32. *See* T. DAVIES & J. MAZURECK, GLOBAL ENVIRONMENTAL MANAGEMENT INITIATIVE RESOURCES FOR THE FUTURE, INDUSTRY INCENTIVES FOR ENVIRONMENTAL IMPROVEMENT: AN EVALUATION OF US FEDERAL INITIATIVES (Sept. 1996).

33. ECO-EFFICIENCY TASK FORCE, CHEMICAL OPERATIONS TEAM OF THE PRESIDENT'S COUNCIL ON SUSTAINABLE DEVELOPMENT, PROPOSED POLICY RECOMMENDATIONS FOR THE CHEMICAL INDUSTRY (1995).

Clean Air Act amendments.[34] In 1991, one commentator admirably summarized the situation as follows: "For twenty years economic approaches have played a minor role in air pollution control while a very complex command and control system has evolved. When economic approaches have been used in the past they have been discouragingly complex, which may explain the business community's reluctance to participate."[35] The position has changed only modestly since that date.[36] Notwithstanding some encouraging later successes with tradable permits in Southern California,[37] the regulatory regime remains "medium-specific, largely command and control, technology-based, and highly prescriptive."[38]

Since the early 1970s, chemical industry regulation in Canada, most Western European nations and Australia has also relied largely upon direct regulatory instruments such as prohibitions, permit requirements, standards, and planning obligations.[39] However, regulation in these countries (notwithstanding some significant differences of emphasis in individual jurisdictions) can be distinguished from the U.S. approach at a number of levels. First, the very processes of rulemaking, standard setting, and enforcement commonly involve much more willingness to compromise and seek consensus.[40] Second, medium-specific approaches are rapidly being replaced by more holistic and integrated approaches, addressing all environmental media within a single statute, and (for individual enterprises) under a single permit or license.[41] Third, (with the most notable exception of Germany)[42]

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34. 42 U.S.C. 7651(b) (1994). *See generally* WILLIAM H. ROGERS, JR., ENVIRONMENTAL LAW: AIR AND WATER POLLUTION 64-74 (supp. 1994).

35. Reitze, *supra* note 27 at 1630.

36. *See, e.g.,* C. Boyden Gray, *Public versus Private Environmental Regulation*, 21 ECOLOGY L.Q. 434 (1994).

37. See, in particular, the experience of the South Coast Air Quality Management District, Southern California RECLAIM program. Pat Leyden, *Trading in Southern California,* Presentation of a paper at the American Bar Association 26th Annual Conference on Environmental Law (Mar. 1997).

38. *See* Fiorino, *supra* note 29 at 480. *See generally* Eric W. Orts, *Reflexive Environmental Law*, 89 NW. U. L. REV. 1227 (1995).

39. *See, e.g.,* Eckard Rehbinder & Richard Stewart, *Environmental Protection Policy* in METHODS, TOOLS AND INSTITUTIONS (Mauro Cappelletti et al. eds. 1986).

40. *See, e.g.,* DAVID VOGEL, NATIONAL STYLES OF REGULATION: ENVIRONMENTAL POLICY IN GREAT BRITAIN AND THE UNITED STATES (1986); KEITH HAWKINS, ENVIRONMENT AND ENFORCEMENT: REGULATION AND THE SOCIAL DEFINITION OF POLLUTION (1984); Brinkman, *supra* note 25.

41. *See, e.g.*, Protection of the Environment Operation Act No. 156 (NSW 1997).

42. German industrialists have been "more comfortable with detailed and precisely worded legislation that spelled out industry's obligations clearly and limited

there is a greater emphasis on performance outcomes, leaving industry with greater freedom in how to reach a particular environmental goal.[43]

Although Western European, Canadian and Australian chemical industry regulation is, by and large, more responsive than American regulation, most governments also increasingly recognize that direct regulation of the chemical industry is reaching the limits of its usefulness. Direct regulation is "very costly to monitor, inspect and, when necessary, punish those organizations subject to traditional environmental legislation."[44] Often only minimum environmental standards can be imposed and it is difficult to cover all environmental effects - particularly since many new chemicals are invented and introduced into the market each year. Moreover, the sheer volume of regulation to which the chemical sector is subjected can have a considerable cumulative effect. For example, the German chemical industry (perhaps the closest European country to the American model) is now subject to an estimated 2000 different laws.[45]

A further criticism, even of the more flexible forms of chemical industry regulation, is that it does not encourage continuous improvement. Once an enterprise has achieved the legally prescribed standard (e.g. an emission concentration of no more than 100 parts per million) there is no incentive to further reduce the level of emissions. For this reason, it has been argued that "we should be adopting an approach which seeks to enhance industry competitiveness by driving or luring industry towards best practice, not in a manner which requires or rewards Health, Safety and Environment (HSE) best practice, but by creating a regulatory environment which strives for and allows for excellence in HSE outcomes."[46]

Despite the growing recognition of the limitations of traditional styles of regulation, European Union environmental regulatory reform is still an effort that has progressed slowly,

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the discretion of German bureaucrats." Brinkman *supra* note 25 at 232. This is in sharp contrast to the British preference for broad and flexible regulation allowing for considerable discretion in interpretation by regulatory officials. As Brinkman et al. put it: "concepts like 'reasonable' and 'practicable' sum up British regulatory philosophy, a philosophy generally shared by industry." *Id.* at 229.

43. Rust PPK, *supra* note 19.

44. Franke & Watzold, *supra* note 23, at 178.

45. ENVIRONMENTAL POLICY IN EUROPE: INDUSTRY, COMPETITION AND THE POLICY PROCESS 177 (Francois Leveque ed. 1996).

46. RUST PPK, *supra* note 19, at 26.

notwithstanding the urgings of the European Union Fifth Action Program "Towards Sustainability."[47] For example, economic incentives did not play a significant role until the 1990s, and then only in limited areas.[48] If there is indeed a trend away from command and control towards "conduct regulation" such as voluntary agreements and economic instruments, then it is still in its very early stages[49] (although the Dutch[50] have advanced substantially further). Such is also the case in Canada[51] and Australia.[52]

However, in almost all the countries under discussion, there has been a move to supplement command and control with information-based strategies such as Community-Right-To-Know (CRTK) provisions in the U.S.,[53] the Seveso and Seveso II Directives in Europe, and the proposed introduction of a National Pollutant Inventory in Australia. The CRTK provisions, applicable to most industry categories, have particular implications for the chemical sector because they reveal to the public in graphic and measurable terms the high percentage of total emissions contributed by that sector, and by individual enterprises within it. The role of community participation is also growing, facilitated by access to information through the mechanisms described above.[54]

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47. *Chemical Release Inventory at the Crossroads,* 269 ENDS REPORT 19 (June 1997). *See also DGIII Bugs Chemical Industry Pleas for De-regulation,* 256 ENDS REPORT 40 (May 1996) (describing pledges given by the European Commission to simplify existing legislation on chemicals by focusing on risk assessment, cost-benefit analysis, and comparison against rules outside the EC).

48. *See, e.g.,* Eckard Rehbinder, *Environmental Regulation Through Fiscal and Economic Incentives in a Federalist System,* 20 ECOLOGY L. Q. 57 (1993).

49. *See generally* ENVIRONMENTAL POLICY IN EUROPE, *supra* note 45.

50. The distinctive Dutch approach is a sector-specific approach to chemicals devised as part of the National Environmental Plan. The vehicle for delivering the goals set in that plan is the environmental covenant: an agreement negotiated between each individual company and the government and underpinned by the force of civil law. It is the covenant that ensures that each company contributes its share towards achieving the sector-specific goal set in the national plan. *See generally* ENVIRONMENTAL CONTRACTS AND COVENANTS: NEW INSTRUMENTS FOR A REALISTIC ENVIRONMENTAL POLICY? (Jan M. van Dunne ed. 1993).

51. RUST PPK, *supra* note 19.

52. For example, countries such as Australia are taking only their first hesitant steps towards use of economic instruments. The New South Wales Government is proposing to allow tradable permits among mining companies in the Hunter Valley. *See* ENVIRONMENT BUSINESS, Sept. 1994, at 29.

53. *See, e.g.,* CAL. HEALTH AND SAFETY CODE § 25404.6 (West 1988); KENNETH GEISER, BEYOND AUDITING: TOXIC USE REDUCTION IN THE UNITED STATES (1990) (describing Massachusetts' toxic use reduction legislation).

54. However, in other respects, this development is occurring largely irrespective of the legislative provisions. For example, in the United States, Fiorino notes that "[e]ffective citizen (as opposed to interest group) participation in environmental decisions at the local level is not a strength of the current system. Participation often

Finally, both in Europe and the U.S. there have been attempts of very recent origin, to introduce process based regulation emphasizing risk and accident management in respect to the uncontrolled release of hazardous substances. Both the Seveso II Directive[55] in the European Union and the United States' rule on Risk Management Programs for Chemical Accidental Release Prevention[56] require establishment of systems to oversee implementation of risk management program elements. They represent a considerable shift of emphasis (albeit only in one particular area) that "reflects a growing recognition of systems' importance in accident prevention strategy."[57]

In sum, notwithstanding significant differences between the regulatory approaches of different countries, chemical industry pollution control regimes are based predominantly on forms of direct, usually command and control, regulation. Indeed, the chemical industry, because of its diversity, has attracted a larger number of environmental regulations than probably any other industry.[58] All of these regimes are, in varying degrees, expensive, cumbersome, time consuming, inflexible and inefficient.[59] They do not encourage industry to go "beyond compliance" with existing standards. Notwithstanding some significant improvements in recent years, the system of chemical industry regulation still leaves much to be desired, both from an environmental and economic standpoint.

Where should we go next in terms of environmental policy? According to two leading American commentators, we are "poised on the threshold between two fundamentally different stages in the evolution of environmental protection."[60] They argue that the old command and control method of regulating chemical manufacturing - complicated, reactive, and legalistic -

takes the form of public hearings on national standards or decisions made at local or state levels. Fiorino, *supra* note 29, at 482.

55. Directive on the Control of Major Accident Hazards Involving Dangerous Substances (96/82/EC).

56. See the Accidental Release Prevention Requirements: Risk Management Programs. Clean Air Act (codified at 42 U.S.C. 7412(r)(7)(1994)).

57. William T. Thomas, *Using ISO 140001 to Comply with the Management System Requirements of US EPA's RMP Rule and the EU's Seveso II Directive,* EUR. ENVTL. L. REV. (forthcoming Dec. 1998).

58. Ember, *supra* note 16, at 17.

59. The main limitations of command and control have been usefully summarized by the OECD ALTERNATIVES TO TRADITIONAL REGULATION: A PRELIMINARY LIST (1994).

60. Ember, *supra* note 16, at 17.

"does not allow management of the industry's activities in ways that are compatible with nature and therefore sustainable" and has run its course. They suggest that there are currently too few tools to advance environmental policy to the next stage: "from protection to management, that is, from protection to sustainability."

V.

REDESIGNING REGULATION: TOWARDS EFFICIENT AND EFFECTIVE POLICY INSTRUMENTS

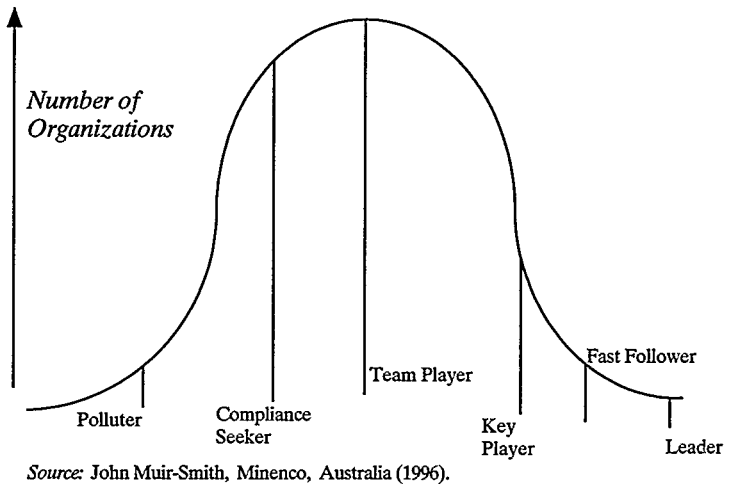
The following sections put forward an alternative vision of chemical industry regulation. A number of alternative policy mechanisms are explored and methods to design complementary combinations of instruments are suggested. The article argues for the need to harness the resources of a broader range of institutional actors. In doing so, the evaluation criteria applied to point-source pollution in the chemical sector are based on the main goals of achieving efficiency and effectiveness, though a range of other objectives may also be important in particular circumstances. Efficiency and effectiveness may commonly, but not always, be complementary objectives. Where conflicts exist and trade-offs are inevitable, efficiency takes precedence. With point-source pollution (excepting some extremely hazardous chemicals) the environment has some assimilative capability.[61] Pollution prevention is placed before pollution control and end-of-pipe solutions because the latter merely entrench unsustainable practices rather than encourage industry to pursue sustainability. This article recognizes the importance not just of

61. Esty, for example, distinguishes between "flow" pollution (caused by particulates in the air, organic wastes in water, and most solid wastes disposed on land which degrade rapidly and for which the environment has some absorptive or assimilative capacity) and "stock" pollutants such as radioactive materials, heavy metals and some toxic chemicals, which degrade much more slowly. *See* Daniel C. Esty, *Revitalizing Environmental Federalism*, 95 MICH. L. REV. 570, 579 (1996).

While this may be substantially less than earlier generations have acknowledged, the fact remains that this capacity enables the use of instruments which, while less dependable than others in delivering environmental outcomes, will do so at less cost. For example, environmental taxes may initially be set at levels too low to achieve the desired environmental outcome. It may accordingly take some time to adjust the tax level to one which influences behavior in the preferred direction and to the preferred degree. In the interim, the environment will continue to be polluted at undesirable levels. However, provided it is sufficiently resilient to tolerate short term abuse, this approach may be preferred (on the grounds of cost effectiveness) to one which, while more dependable in delivering environmental outcomes, imposes higher costs on the parties involved.

transparency and accountability, but also of direct community consultation and involvement in decision-making. While such mechanisms may well achieve greater effectiveness, they are unlikely to be viewed as "efficient" given the time-consuming nature of the tasks.

Finally, encouraging polluters to go "beyond compliance" with existing regulations is preferred to preventing polluters merely from dropping below the legal standard. This is represented in diagram 1. The diagram shows the likely range of responses to government environmental regulation by individual firms. The responses form a bell curve, with a small tail of laggards not meeting minimum obligations, the bulk of firms located at or near minimum compliance, and a small group of leaders achieving substantially higher levels of environmental performance.



Source: John Muir-Smith, Minenco, Australia (1996).

Diagram 1

In a range of circumstances, creative regulation can encourage industry to achieve productivity and other gains in tandem with environmental improvements - the classic "win-win" scenario.[62]

To begin, two important types of innovations in chemical industry regulation are analyzed. Such regulation is in transition. A number of reforms are being introduced, while others glimmer on the regulatory horizon. For the most part, these new approaches, at least in their present manifestations, fall far short of delivering optimal policy outcomes. Nevertheless, most of them contain something of value. Some contain the seeds of more fundamental change. The two types of innovations examined are: (1) self-regulation and, in particular, the Responsible Care program; and (2) systems-based approaches to environmental management and regulation, and in particular the International Standards Organization's EMS standard, ISO 14001. Responsible Care is a self-regulatory scheme designed for, and relating exclusively to, the chemical industry. ISO 14001 is representative of total quality management ("TQM") and systems-based approaches, and is designed for use in any industry sector. As a regulatory mechanism, it can be viewed variously as a means of "privatizing compliance," as a form of process-based regulation, and as a vehicle for achieving regulatory flexibility. Both approaches are attempts by industry to extricate itself from the perceived disadvantages of command and control regulation, and to design alternatives that are more flexible and appropriate to industry needs.[63] They represent radically different approaches to those provided by traditional regulatory regimes. Both of these developments are already, and in the future will remain, of fundamental importance to chemical industry regulation across a wide variety of nations.

A. *Self-Regulation and Responsible Care*

In the following sections the article explores the regulatory implications of the Responsible Care Program. Responsible Care is an extremely ambitious and broad self-regulatory scheme that is intended to reduce chemical accidents and pollution while involving the community in decision-making. Responsible Care

62. Neil A. Gunningham, *Beyond Compliance: Management of Environmental Risk*, *in* ENVIRONMENTAL OUTLOOK: LAW AND POLICY (Ben Boer et al. eds. 1994).

63. As we shall see, ISO 14001 has many other purposes too, but that of acting as a surrogate for more conventional forms of regulation is certainly one important agenda item.

operates in forty-one countries and reaches approximately eighty-eight percent of the global chemical industry.[64]

The study is based on empirical work[65] conducted in Australia (one of the first countries to adopt Responsible Care), and to a lesser extent, in the U.S. and Canada. Many of its conclusions are likely to be applicable to Responsible Care programs internationally.[66] Moreover, its arguments may have a broader resonance for other schemes involving self-regulation, co-regulation, and innovative regulatory design, both in the environmental arena and in other areas of regulatory policy.

A reason for a detailed examination of Responsible Care is its considerable breadth and scope. Proponents describe it as "the most ambitious and comprehensive environmental, health and safety improvement effort ever attempted by an industry,"[67] as "an outstanding model for voluntary industry efforts to promote chemical risk management, fulfill the objectives outlined in Agenda 21, and complement environment, health and safety regulatory processes,"[68] and as "a journey of profound cultural change."[69] Notwithstanding the dangers of overstatement, Responsible Care is not only the single most advanced and sophisticated scheme of environmental self-regulation, but it is also one of the most developed and far-reaching regimes of self-regulation

64. This figure is based on production volumes. *See ICCA readies itself for Ottawa Forum, Tightens Partnership Guidelines*, CARELINE, Oct. 1996, at 1 [hereinafter *ICCA*].

65. The empirical work involved semi-structured interviews with 49 industry participants, self-regulators, government regulators and community representatives in Australia, 30 in the United States and 13 in Canada. Public documents, industry journals and reports were also relied upon to supplement data gathered elsewhere.

66. Although David Vogel rightly alerts us to possible cultural differences between regulatory agencies in different countries (Vogel, *supra* note 40), it may nevertheless be that "certain policy areas are more conducive to private interest government solutions than others" (Alex Jacek, *The Functions of Associations as Agents of Public Policy* in INTERNATIONAL MARKETS AND GLOBAL FIRMS 148 (A. Martinelli ed. 1991)). Indeed, there is considerable evidence that countries can learn from one another in this regard. *See* INDUSTRIAL CRISIS: A COMPARATIVE STUDY OF THE STATE AND INDUSTRY 261 (K. Dyson & S. Wilks eds. 1983). Having conducted interviews not only in Australia but also in the United States and Canada, I am unable to identify cultural distinctions relating to chemical industry regulations of sufficient significance to make my conclusions less relevant to the United States or Canada than they are to Australia. Indeed, the many similar structural characteristics make the analysis relevant to both countries.

67. *Don't Trust Us, Track Us Is Responsible Care Motto*, CHEM. MKT. REP., (Nov. 23, 1992), at 242.

68. *See ICCA*, *supra* note 64, at 1.

69. Peter M. Sandman, Addressing Skepticism About Responsible Care, Presentation to the Chemical Manufacturers Association Meeting (Nov. 6, 1991).

to be found anywhere in the Western world.[70] Indeed, in the view of many, Responsible Care is likely to be the blueprint for future self-regulatory initiatives in other industries.[71]

1. What is Responsible Care?

Under Responsible Care, chemical companies commit themselves to the improvement of all aspects of their performance that relate to the protection of health, safety, and the environment. This includes a commitment to improving relations with customers and communities, product use, and overall operation. These goals are to be achieved by two basic mechanisms. The first is the progressive establishment of a number of Codes of Practice. The precise content of the codes, notwithstanding a common core, varies somewhat from jurisdiction to jurisdiction. For example, in Australia the codes cover transportation; community awareness and emergency response; waste management; warehousing and storage; CRTK; product stewardship; manufacturing; and research and development.[72] These, together with prevailing legislation, have become the rules by which member companies operate and adopt Council membership.[73] All the codes reflect industry best practice. Taken as a whole, most of the codes' implied obligations could be discharged through the adoption of a management system approach.[74] However, the codes go beyond the adoption of such a system and embrace a broader ethic, implying broader responsibilities embodied in a set of guiding principles. See box 1.

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70. *See, e.g.*, Michael Roberts, *Care Gives Industry a Leadership Role in Sustainable Development,* CHEMICAL WEEK, July 7, 1993, at 20 (assessing a leading member of the United Nations Environment Agency).

71. *See e.g.*, David Hunter & Rick Mullin, *Responsible Care: The Challenge of Communication,* CHEMICAL WEEK, Dec. 9, 1992 at 22. Significantly, a number of industry programs are already modeling themselves on Responsible Care, including the paint industry's Coatings Care Program and other groups, such as vinyl chloride and chlorinated solvents producers, and are in the process of developing such programs.

72. In the United States the codes cover: (i) community awareness and emergency response; (ii) pollution prevention; (iii) distribution; (iv) process safety; (v) employee health and safety; and (vi) product stewardship.

73. AUSTRALIAN CHEMICAL INDUSTRY COUNCIL, ANNUAL REPORT (1993).

74. However, note that far from all Responsible Care companies have adopted this approach. For example, in the U.K., 7 years after the introduction of Responsible Care, only 40% of CIA members have formal environmental management systems. ENDS REPORT, June 1996, at 3.

Box 1

UNITED STATES CHEMICAL MANUFACTURERS ASSOCIATION
1995
The Responsible Care ethic as embodied in the Guiding Principles

- To recognize and respond to community concerns about chemicals and our operations;
- To develop and produce chemicals that can be manufactured, transported, used and disposed of safely;
- To report promptly to officials, employees, customers and the public, information on chemical-related health or environmental hazards and to recommend protective measures;
- To make health, safety and environmental considerations a priority in our planning for all existing and new products and processes;
- To participate with government and others in creating responsible laws, regulations and standards to safeguard the community, workplace and environment;
- To counsel customers on the safe use, transportation and disposal of chemical products;
- To operate our plants and facilities in a manner that protects the environment and the health and safety of our employees and the public;
- To extend knowledge by conducting or supporting research on the health, safety and environmental effects of our products, processes and waste materials;
- To work with others to resolve problems created by past handling and disposal of hazardous substances; and
- To promote the principles and practices of Responsible Care by sharing experiences and offering assistance to others who produce, handle, use, transport or dispose of chemicals.

SOURCE: Chemical Manufacturers Association ("CMA"), *Responsible Care: Progress Report 1994-95* (1995), CMA, Washington DC.

The second characteristic of Responsible Care is a commitment to community participation and consultation. In Australia this is achieved principally through the establishment and functioning of the National Community Advisory Panel ("NCAP"), in the United States by a National Public Advisory Panel, and in

Canada by a National Advisory Panel. For example, the Australian NCAP comprises "a cross-section of individual community thought leaders with particular concerns for environmental safety and health issues."[75] The NCAP is intended to provide a vehicle through which the public may play an integral role in shaping the Responsible Care initiative. The NCAP members review proposed codes of practice from a public interest perspective, and they alert the Australian Chemical Industry Council ("ACIC") to other emerging issues of public concern.

Broader public involvement is also contemplated through efforts to accommodate the particular needs of local communities adjacent to manufacturing sites. According to ACIC, specific Codes and operating plans "go beyond regulatory compliance" by minimizing on possible hazards, encouraging community involvement, and establishing a reliable and improved performance. The formation of Regional Responsible Care groups is also encouraged. These groups: "progressively work towards establishing links with local community associations, whilst sharing knowledge on their progress with Responsible Care and the resources available for emergency response situations."[76]

In all jurisdictions, the scheme promises a commitment to genuine improvement that goes "beyond compliance" with existing environmental legislation. Papers presented at a European Chemical Industry Association ("CEFIC") workshop summarized the Responsible Care commitment amongst chemical companies. Responsible care has committed them in all aspects of safety, health and protection of the environment, to seek continuous improvement in performance, to educate all staff, and work with customers and communities regarding product use and overall operation.[77]

2. Can Responsible Care Deliver Smarter Regulation?

The chemical industry has characteristics that could make Responsible Care programs one of the few cases in which industry and public interests are sufficiently coincident for self-regulation to be a viable regulatory strategy. The large, transnational corporations that dominate the chemical industry internationally

75. AUSTRALIAN CHEMICAL INDUSTRY COUNCIL, ANNUAL REPORT 3 (1993).

76. AUSTRALIAN CHEMICAL INDUSTRY COUNCIL, ANNUAL REPORT 6 (1993).

77. EUROPEAN CHEMICAL INDUSTRY COUNCIL, PROCEEDINGS OF THE FIRST INTERNATIONAL WORKSHOP ON RESPONSIBLE CARE IN THE CHEMICAL INDUSTRY (1991).

drive Responsible Care.[78] These companies have the necessary motivation and capacity to change industry practice and culture.

Industry's increased environmental sensitivity stems from the continuing and serious decline of industry's public image. This decline is closely connected to a series of chemical accidents and wider concerns about the health and environmental effects of chemical production generally.[79] Large multinational corporations rely heavily on their corporate image for their commercial success. Union Carbide learned this lesson the hard way in the wake of the Bhopal disaster. More recently, Exxon also suffered disastrous public relations, not to mention massive financial liability, when the Exxon Valdez ran aground in the pristine waters of Prince William Sound. Corporations can respond to these misfortunes in a variety of ways. One relatively cheap solution is for a company to disassociate from potential disasters related to its activities. In the future, we are unlikely to see many oil tankers emblazoned with the names of their transnational corporate owners. Ownership may well devolve to subsidiaries, shelf companies, or independent contractors.

In the case of the chemical industry, however, such cheap means of protecting corporate image are not available to the same extent. Chemical disasters (and even incidents without se-

78. For example in Australia a relatively small number of firms import twenty thousand toxic and hazardous chemicals annually (only 3.4% being manufactured domestically) and thereby control the feedstocks or imports to those processors which produce hazardous wastes (*See* PLASTICS & CHEMICALS INDUSTRIES ASSOCIATION, FACTS AND FIGURES (1991); Twelve companies, out of the 90 or so members of ACIC have a volume of over about $0.3 billion per year. Of these, 10 are transnationals, and two are Australian owned (Jim Smith, *Measuring Health, Safety and Environmental Performance: Why, What, and Whose?* (summary of a paper presented to the ACIC Convention, Feb. 21, 1994, Leura, NSW)).

79. Industry polls over the last decade have consistently revealed a high level of public anxiety and distrust of chemical manufacturers, with companies commonly being regarded as greedy, rapacious and irresponsible. *See* S.J. LEWIS, THE ROLE AND LIMITS OF VOLUNTEERISM 2 (1991) (citing a United States opinion poll conducted in 1990 which found that the chemical industry's rating of public acceptability had dropped to 20% - only the tobacco industry has a lower rating. Over 60% of the public rated the industry as "very harmful to the environment"). *See also Summary and Conclusions,* AUSTRALIAN CHEMICAL INDUSTRY COUNCIL MONITORING COMMUNITY ATTITUDES, Dec. 1992 at 11 (citing survey in Australia of community attitudes that concluded that the "chemical industry is associated with pollution, danger, explosives and possible ill-effects from the use of chemicals and chemically based products. It is also associated with secrecy, lack of public disclosure, possible dishonesty and lack of ethics"); *Chemical Industry Eases Towards Comparability in Environmental Reporting,* ENDS REPORT, Aug. 1996, at 20 (presenting findings by CEFIC which once again suggested that the public has a very poor opinion of the industry's environmental credentials and trustworthiness).

rious consequences) tend to be highly visible and readily identified with individual installations and their corporate owners. Large chemical corporations usually find that it is impossible to improve corporate image without improving environmental performance.[80] In the words of one senior executive, the major chemical companies in the 1980's concluded they "just [could not] advertise their way out of it."[81]

Of course, nothing prevents individual companies from improving their own environmental performance without invoking Responsible Care, and many of them are in the process of doing so.[82] The main motivators may include not just improved corporate image and community relations, but also competitive advantage and increased profitability. Firms that take an environmentally proactive stance commonly save substantial sums of money and increase profit directly. Examples include improved energy efficiency, recycling, or the development of competitive environmental technology.[83]

However, individual initiatives will not be sufficient to give the whole industry the credibility it badly needs to survive and prosper in the long term. As one industry spokesman pointed out, "Du Pont and other majors can't rest on their accomplishments. They need to recognize that any incident in the industry destroys the credibility of everyone." Canadian Chemical Producers Association President (1991), Jean Belanger, notes that "if a paint company or a plating company does something wrong the headlines the next day will scream that chemicals have been wrongly handled and so we will all be tarred by the same brush." Such an incident exposes the industry to tougher regulatory requirements, obstacles to development and community backlash.

A series of such incidents serves to reinforce the industry's very poor public image and results in a host of other problems. In the long term, the chemical industry's negative public image is

80. This is consistent with the very high level of spending by major chemical companies on occupational health and safety, and the low accident rate of such companies. *See also* Hazel Genn, *Great Expectations: The Role of Legacy and Employer Self-regulation* (1985) (unpublished paper, Oxford Centre for Legal Studies); Joan Magretta, *Growth Through Global Sustainability.* HARV. BUS. REV., Jan. -Feb. 1997, at 88 (providing a more recent statement of one leading chemical company's view).

81. Charles Greenert, Interview, quoted in "Responsible Care" (1991) *Harvard Business School Documents* 9-391-135.

82. *See, e.g.*, CHEMICAL MANUFACTURERS ASSOCIATION, RESPONSIBLE CARE: PROGRESS REPORT 1994-95 (1995).

83. *See generally* Gunningham, *supra* note 62.

likely to result in a loss of public support, a regulatory backlash, extreme difficulty in persuading communities to accept new chemical installations in their locality, and a host of other problems "affecting everything from government relations to the recruitment of managerial and scientific talent." As one industry spokesman put it "businesses can only survive whilst they have society's acceptance for their activities. Once that acceptance is lost, there is only one way to go."[84] Without a change in public attitudes, the chemical industry's long-term survival is threatened.

Each company in the chemical industry must therefore act as its brother's keeper. A mechanism must be found, nationally and internationally, that enables the industry to continuously improve the environmental performance of all companies, large and small. Such a mechanism must be capable of improving the industry's poor public image, restoring public faith in the industry's integrity, and reducing demands for stricter government regulation.[85] Most importantly, it might also serve as a complete alternative or important complement to conventional government regulation. Big companies decided that that mechanism should be Responsible Care. But is Responsible Care up to that task?

The chemical manufacturers associations are in a stronger position than most such bodies to exert pressure for environmental improvement, in part because the industry's characteristics facilitate the development of "social capital," i.e. the development of "the features of social organization, such as networks, norms and trust, that facilitate coordination and cooperation for mutual benefit."[86] The industry is an incestuous one in which companies constantly deal with each other.[87] Strategic alliances, product swapping, and technology transfers are the norm rather than the exception. Building on these characteristics, the chemical industry associations, through Responsible Care, have facilitated the development of trust among their members, creating an environment within which people work together, share information, pro-

84. Colin E. Holmes, Address to Hazardous Waste Conference at Melbourne (1992).

85. Rick Mullin, *Canadian Deadline Approaches: Contemplating Continuous Improvement*, CHEM. WK., June 17, 1992 at 128.

86. Robert D. Putnam, *The Prosperous Community, A Prospect*, pp. 35-42 *reprinted in* CURRENT, Oct. 1993 at 4.

87. *See generally* Joseph Rees, *The Development of Communication Regulation in the Chemical Industry*, L. & POL'Y (forthcoming 1998).

vide mutual aid, and establish policy. Tangible manifestations of this include Responsible Care's leadership groups,[88] workshops, mutual assistance network, and implementation guides. By increasing interpersonal trust and reducing uncertainty, the development of community lowers transaction costs and encourages collective action.[89]

More broadly, Responsible Care has enabled the development of an industrial morality, a set of norms that generate a sense of obligation that in turn emphasizes particular values and structures choice. Such a morality provides:

> . . . a form of moral discourse capable of challenging conventional industry practices - "[t]his is the way we always do business around here" - including the economic assumptions underlying many of those taken-for-granted policies and practices. In this way, an industrial morality . . . legitimizes aspirations other than profit as a good reason for action. It establishes an alternative moral vocabulary, a rhetoric of organizational motive that competes with (and critiques) the native tongue of the business organization, the language of profits and losses.[90]

Within such a context, the peer group pressure acts as an effective driver of corporate change. For example, the leadership groups in particular fulfill this role, bringing together representatives of a number of companies to share their experiences, their progress, and, by implication, their lack of progress.[91]

Similarly, Responsible Care can potentially act as a vehicle for corporate shaming[92] by publicly exposing a polluter's moral failings. The performance indicators and verification mechanisms currently being adopted under Responsible Care, could form the basis for identifying recalcitrants and exposing them to the glare of adverse publicity. Anecdotal evidence suggests that, to a modest extent, such shaming already takes place through the leadership groups. In these ways, Responsible Care provides a vehicle for informal social control: regulation from the inside ("moraliz-

88. These groups usually meet quarterly with peers to review progress and to provide and receive assistance. They are reputedly a highly effective way of creating peer pressure, and of enlisting corporate leaders to the cause of Responsible Care.

89. *See generally* Rees, *supra* note 87.

90. *See generally* Neil A. Gunningham & Joseph Rees, *Industry Self-Regulation: An Institutional Perspective*, 1 L. & POL'Y (1997).

91. Chris Wheal, *Cleanup or Clearcut*, THE ENGINEER, Mar. 5, 1992 at 20.

92. *See generally,* JOHN BRAITHWAITE, CRIME, SHAME AND REINTEGRATION (1989) (arguing persuasively the importance of a moral dimension to corporate and individual behavior, and documenting the considerable extent to which corporations can be shamed into doing the right thing).

ing social control")[93] rather than regulation from the outside (based on external constraint). The various Responsible Care mechanisms are designed to develop mutual trust among competitors and to facilitate mutual aid, information and technology sharing, and peer support. They also create pressure for corporate shaming and dialogue with local communities, the public and governments. Taken together, these mechanisms foster a climate that can motivate and drive corporate executives to do far more in terms of environmental performance than the law could credibly require.

However, despite its considerable potential and strengths, there are also many obstacles to the success of Responsible Care. First and foremost, environmental protection and private profit do not necessarily coincide. Nor are they perceived to coincide, particularly given the emphasis of most corporations on short-term profitability.[94] For both corporations and individual managers, the essential dilemma is that they will be judged on short-term performance. If they cannot demonstrate tangible economic success in the here and now, there may be no longer term to which to look forward.[95]

Still, large enterprises are in a better position to take a long-term view and to achieve long-term objectives than small enterprises.[96] Economically marginal firms (generally some SMEs)[97]

93. *Id.* at 9-11.

94. Because corporations are judged by markets, investors and others principally on short term performance, they have difficulty justifying investment in environmentally benign technologies which may make good economic sense in the long term, but rarely have an immediate or medium term pay-off. Most areas of reform, including stopping harmful emissions to land, water and air, replacing harmful chemicals with more expensive ones, and cleaning up contaminated land, are vulnerable to these short-term market pressures.

95. *See generally*, ROBERT JACKALL, MORAL MAZES: THE WORLD OF CORPORATE MANAGERS (1988) (the author found that short term issues overwhelm long term considerations. In Jackall's view "[m]anagers think in the short term because they are evaluated both by their supervisors and peers on their short term results." As one manager put it: "Our horizon is today's lunch." *Id.* at 84. Jackall also found that staff mobility, both within and between corporations (often the result of CEO-inspired reorganizations), meant that those who currently occupy a managerial post might feel no urgency about the environmental consequences of their decisions. This was because the threat of immediate governmental retribution, via the EPA, was most unlikely, and the delays in processing environmental actions through the courts meant that by the time a case was heard, the present incumbents would have moved on, leaving others to deal with the legacy of those decisions); James E. Rogers Jr., *Adopting and Implementing a Corporate Environmental Charter*, BUS. HORIZONS, Mar. 1, 1992, at 29-33.

96. The dichotomy is not invariably appropriate. For example, some small enterprises, particularly those operating in niche markets, have considerable sophistica-

cannot afford the luxury of a long-term view. For them, the likelihood of sacrificing environmental concerns for short-term profit (or survival) is very high. Many firms must also rely heavily on old, inefficient plants. As a result, they most commonly emit the greatest amounts of pollution. It is usually far more expensive to retrofit such plants with advanced pollution technology than it is to incorporate state of the art environmental technology into new plants.[98]

In contrast, companies that have substantially higher profit margins and control over or access to rapidly changing or advanced technology are in a far better position to take environmental initiatives that yield only long-term dividends. Larger enterprises and transnationals in particular, by virtue of their market share and other advantages, can usually afford to consider a range of goals besides just short-term profits.[99] These include the pursuit of long-term strategies of enlightened self-interest. They routinely ask "where do we want to be in ten years time?" and "what are the chemical industry's prospects in the same time frame?"

A broad divide exists between the interests, attitudes and capabilities of large and small firms when it comes to environmental protection and implementing Responsible Care. For large corporations with a high public profile, the consequences of a poor environmental record are likely to be both substantial and visible. Environmental protection is thus a high corporate priority that they have both the technological capacity and the economic resources to address. In contrast, many smaller enterprises do not have a public profile (they may indeed never deal with the public directly) and their reputation and profitabil-

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tion, technological expertise, and capacity for long term planning. Nevertheless, the distinction is largely accurate and is a useful one in highlighting divergence of interests within the industry.

97. ECO-EFFICIENCY TASK FORCE, PRESIDENT'S COUNCIL ON SUSTAINABLE DEVELOPMENT, CHEMICAL OPERATIONS DEMONSTRATION PROJECT 22 (1995).

98. *See* Robert Abrams & Douglas H. Ward, *Prospects for Safer Communities: Emergency Response, Community Right to Know, and Prevention of Chemical Accidents,* 14 HARV. ENVTL. L. REV. 135 (1990) ("Voluntary actions are likely to be viewed as dispensable extravagances by companies suffering financial difficulties. They may be abandoned over time as management changes or pressure for such efforts fades.").

99. Brian Peter Pashigan, *How Large and Small Plants Fare Under Environmental Regulation,* REGULATION Sept.-Oct. 1983 at 19-23 (arguing such firms also have the technological capacity and the economies of scale to make environmental improvements both technically feasible and economically realistic).

ity may be far less affected by a poor environmental record. Given the economic and technological constraints within which many of them operate, their capacity to address such problems is also often very limited.[100] Indeed, as one industry respondent put it, "once organizations start to apply the codes of practice it hits home how much work is involved . . . [I]t's OK for large companies like "X" which is well down the track anyway, but [it's]a lot of cost and effort for many other companies." Another industry respondent in Australia put it more bluntly, "once they realize it will cost the industry three billion dollars, they'll drop it like a hot brick." Considerable empirical evidence supports this view; in Australia, the Chemical Specialty Manufacturers Association ("ACSMA"), which represents many of the smaller companies has withdrawn completely from Responsible Care, citing, in part, the excessive costs and burdens that the program would impose on its members.

The divergence of interests between large and small enterprises raises the problem of how to overcome "free-rider" and "mutual assurance" problems or, generically, problems of collective action. Left to their own devices, many small companies will continue to inflict substantial environmental damage. This behavior may well defeat Responsible Care's attempt to improve the overall image of the chemical industry. If a significant number of smaller companies do not comply, large companies lose much of the incentive to continue their own voluntary action. If the public fails to distinguish between "good" and "bad" companies, but rather blames the industry as a whole for the sins of the worst transgressors, environmentally responsible companies will suffer the stigma, lack of credibility and public backlash caused by the misdeeds of non-complying companies. As a result, any company spending on Responsible Care, other than as a matter of immediate self-interest (which may include its "green" credentials), puts itself at a competitive disadvantage relative to

100. Consistent with this analysis, a 1991 McKinsey survey found that the most constructive responses can be found consistently in multinational companies in highly competitive industries that are close to the consumer and headquartered in cutting-edge regions. Even in the more advanced nations, a much more reactive, or at best receptive, response can still be found in a majority of small and medium-sized companies and in industry sectors that are characterized by a high degree of oligopoly or a tradition of government involvement. It would appear that a "protection" from public scrutiny results in less attention to environmental concerns. James E. Rogers Jr., *Adopting and Implementing a Corporate Environmental Charter*, BUS. HORIZONS, Mar. 1, 1992 at 29-33.

more pragmatic rivals who may continue to pay lip-service to Responsible Care but do little to further its long-term ends; in effect, "free-riding" on the efforts of others.[101] Firms are likely to defect from the scheme unless either free-riding can be prevented or firms can be given the necessary assurance that others will contribute their fair share ("mutual assurance").[102]

However, even resolving the collective action problem (i.e. overcoming free-riding and mutual assurance issues) will not guarantee the fulfillment of Responsible Care's fundamental objective - to change industry behavior *in ways that secure the trust and confidence of the public.* The second obstacle involves a core problem inherent in many self-regulatory schemes - they involve regulation of the industry, by the industry, for the industry, often coupled with limited transparency and accountability. In the case of Responsible Care, this "credibility obstacle" will be insurmountable unless mechanisms are put into place that manifestly give the scheme teeth, and allow for transparency, effective government and third-party oversight.

Until approximately 1996, Responsible Care was based exclusively on self-monitoring and self-reporting. Individual companies evaluated their own performance in complying with the codes of practice using mandatory agreed on assessment procedures.[103] In terms of enforcement, if moral pressure from peers

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101. For an in depth discussion of the free-rider problem, *see generally,* MANCUR OLSON, THE LOGIC OF COLLECTIVE ACTION: PUBLIC GOODS & THE THEORY OF GROUPS (2nd ed. 1971).

102. *See* Carlisle Ford Runge, *Institutions and the Free-Rider: The Assurance Problem in Collective Action,* 46 J. POL. 154 (1984); Ian Maitland, *The Limits of Business Self-Regulation,* 27 CAL. MGMT. REV. 132, 134 (1985) (suggesting that perhaps the assumption that business is invariably rational and self-interested, and accordingly will free-ride, is too strict, especially given that Responsible Care represents the recognition by many of the leading players in the industry that "each must be his brother's keeper." This suggests that the basic obstacle to effective self-regulation in the circumstances described above is an "assurance problem").

103. Briefly, (using the Australian version of the scheme by way of illustration) the responsibility for the oversight of Responsible Care lies with an industry association, the ACIC committee, and with the Responsible Care coordinators responsible for the scheme's administration. The industry association's oversight role however, is a modest one which mainly involves issuing self-evaluation forms to participating companies, and following up with those companies who do not respond within a stated period. Significantly, the ACIC does not attempt to validate the accuracy of the self-assessments it receives.

In effect it is the individual member companies which must implement and enforce Responsible Care. The CEO of each participating company pledges the company's commitment by signing the Abiding Principles of the Responsible Care Program. Each company then makes its own arrangements to communicate this commitment to management and all employees (AUSTRALIAN CHEMICAL INDUSTRY

and the ACIC is ineffective, then "in cases where members clearly disregard their obligations in respect of Responsible Care and government expectations, their membership can be terminated."[104] However, on the basis of behavior of the industry associations that administer Responsible Care, the likelihood of expulsion is extremely low.[105] As one of our respondents put it: "the biggest problem with Responsible Care is there are no bodies": no one whom the industry association has demonstrably taken disciplinary action against. And even if a member is expelled, it can still exist profitably outside of the industry association. Some chemical industry associations indeed, will not even disclose the identity of a firm that withdraws from Responsible Care, and therefore from the association.

This structure raises, in stark form, the crucial issue of accountability. As Peter Sandman notes:

> The chemical industry is long past the time when it can say we're doing x, y and z, and have people take its word for it . . . While there is certainly more accountability in Responsible Care than in other industry programs, there is still not enough teeth in it.[106]

Put crudely, while companies are allowed to grade their own exam papers, there is an obvious temptation to fudge the results of their own internal monitoring. Even in the unlikely event that they fail themselves, there are no credible sanctions for failure.

As a result of these limitations, Responsible Care will almost certainly fail to overcome either collective action/mutual assurance problems or public trust problems. In terms of collective action, there is overwhelming evidence that moral persuasion alone will be insufficient to bring about effective self-regulation. With nothing to guarantee or enforce the commitment of firms to

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COUNCIL, RESPONSIBLE CARE PROGRAM GUIDE 10 (1989)), and takes responsibility for all relevant monitoring and assessment measures. The primary means of encouraging compliance is moral pressure, which it is hoped will be increased by providing opportunities for senior executives with responsibility for Responsible Care to meet and compare their experiences. *See Id.*

104. *Id.* at 20.

105. For example, in North America, where Responsible Care has been operational for a number of years, there is no documented case of a company's membership being so terminated. This probably reflects the philosophy of the relevant industry associations. *See, e.g.,* Chris Wheal, *Cleanup or Clearcut,* THE ENGINEER, Mar. 5, 1992 at 20 (quoting Tamar Posner, head of regulatory affairs at the Chemical Industry Association, who said, "You can't get acceptance just by jamming things down people's throats.").

106. David Rotman, *Pushing Pollution Prevention,* CHEM. WK., July 17, 1991 at 31.

the self-regulatory scheme, some firms will inevitably defect. When they do so, the entire social contract on which the agreement of the majority is based is undermined.[107] In these circumstances, firms that comply with Responsible Care risk putting themselves at a competitive disadvantage vis-a-vis those who do not. The free-rider problems are overwhelming. Responsible Care will not help the industry win the public's trust; it lacks effective strategies for monitoring and enforcement and fails to engage the public in a dialogue about industry concerns. Industry's progress might usefully be charted according to the categorization developed by Peter Sandman.[108] At stage one ("the Stonewall stage"), the industry builds a stone wall between itself and the public - maintaining that it knows best, that the public misunderstands chemical risks and that there is nothing to talk about. At stage two ("the Missionary stage"), the industry educates people about chemicals and chemical risks - in effect trying to teach people they are wrong about the chemical industry. Finally, at stage three ("the Dialogue stage"), the chemical industry openly acknowledges its problems and faults, and is prepared both to provide full information and to listen (a genuine dialogue) rather than talk at the community. Current experience indicates the industry is now into the Missionary stage, but occasionally regresses to the Stonewall stage.

On a related point, the industry remains locked into a scientific paradigm that does not connect well to the concerns and values of the groups they are seeking to influence. One commentator has correctly characterized Responsible Care as representing "the traditional views of an industry with strongly embedded roots in science and the laboratory as the source of truth and correctness."[109] So long as the industry remains convinced that its own knowledge and expertise is the best, or indeed the only rational way to view the world, then it will fail to gain the trust of the various publics to which it appeals.

A number of other serious problems threaten the success of Responsible Care. First, some of the industry associations responsible for implementing Responsible Care fiercely oppose

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107. Ian Maitland, *The Limits of Business Self-Regulation,* 27 CAL. MGMT. REV. 132, 139.

108. PETER M. SANDMAN, ADDRESSING SKEPTICISM ABOUT RESPONSIBLE CARE (1991).

109. *Chemical Industry Eases Towards Comparability in Environmental Reporting, supra* note 79, at 21 (quoting John Ehrenfeld, the director of MIT's Technology, Business & Environment program).

any kind of government regulation. Thus, the potential for constructive co-regulation is limited. Second, many individual companies fail to act in the spirit of CRTK and some fail to honor their broader Responsible Care commitments. Finally, many small companies, or even middle management and workers of large companies are relatively ignorant of what Responsible Care requires of them.[110]

The most serious problem is probably the first. The large majority of non-industry respondents interviewed for this study felt that the chemical industry associations, whether in Australia or North America, continue to behave largely as trade associations which are prone to behave as lobbyists, committed to defending the sectoral interests of the industry as narrowly defined by the most conservative element of the membership. According to one industry observer:

> . . . they think they're reflecting the members' views but they always go for the lowest common denominator. That way they're less likely to be criticized by the membership. It's safer to be conservative . . . it's safer to take a lowest common denominator approach.

Such an approach includes resisting proposed government regulation on behalf of the membership.[111] This raises serious questions whether the association responsible for industry public relations and for advocacy can credibly advance the Responsible Care philosophy. In the words of one government regulator in the United States: "Responsible Care is an important initiative but the CMA is absolutely the worst body to implement it."[112]

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110. *See* Neil A. Gunningham, *Environment, Self-Regulation, and the Chemical Industry: Assessing Responsible Care*, 17 L. & POLICY 58, 75 (1995).

111. *Id.*

112. *See also* Ronald Begley, *Will the Real Chemical Industry Please Stand Up?*, CHEM. WK., July 7, 1993, at 18 (quoting another government regulator who has argued publicly that: "One of the problems the Responsible Care program suffers from is its connection with CMA, because CMA plays many roles for the industry. And one of the things CMA does on behalf of the industry is attack regulations. It is viewed as the front line defender of the chemical industry's interests in those regulatory debates. It is difficult for that same organization to come back and say, in the next breath, 'Oh, but we have this Responsible Care program, which is really wonderful, and we want to work with everybody.' It's often the case that there are mixed messages. It appears sometimes that the positions CMA is taking in public policy debates are not consistent with Responsible Care. And I think that's a very difficult role for CMA to play - to be the principal advocate of Responsible Care and also serve the other interests of the chemical industry in terms of public policy issues in Washington.").

Although Responsible Care in its present form is unlikely to deliver the environmental benefits it promised, this is no reason for rejecting the scheme in its entirety. To do so would "be to throw the baby out with the bathwater." Despite its flaws, Responsible Care has some considerable virtues. It remains one of the most sophisticated and advanced self-regulatory schemes yet developed. The codes of practice, in comparison with most other such schemes, are both detailed and far-reaching in their effects. There is some genuine coincidence between the industry self-interest in securing its long-term future and the public interest in environmental protection. Many large and influential companies wish the scheme to succeed. Mechanisms for nurturing peer group pressure, for sharing environmental technology, and for developing trust are also substantially advanced under Responsible Care. Finally, it has the traditional virtues that self-regulation claims over command and control regulation: flexibility, lower costs, and the capacity to encourage cost-effective industry responses.

Responsible Care has already delivered some important benefits. There is evidence of substantial emissions reductions and of continual improvement (as judged by emissions reductions measured by the United States TRI[113] and by the Canadian National Pollutant Release Inventory),[114] an increase in community involvement, and in external evaluation.[115] Empirical evidence suggests that Responsible Care has prompted some important changes in firm organization, practices, and, in some cases values. While the response of Responsible Care firms is not uniform, there seems to be more interaction and involvement in environmental issues of corporate managers not typically responsible for environmental management, more interaction with local communities on environmental concerns, and greater discourse with distributors concerning expectations about how their products should be handled and transported. Responsible Care also ap-

113. *See* CHEMICAL MANUFACTURERS ASSOCIATION, RESPONSIBLE CARE: PROGRESS REPORT 1994 at 23 (1995) (reporting that, based on 1993 TRI figures, CMA companies have reduced toxic releases by 49% since 1987, while increasing industry production in the same period by 18%).

114. *See generally* CANADIAN CHEMICAL PRODUCERS' ASSOCIATION, REDUCING EMISSIONS: 1994 EMISSIONS INVENTORY AND FIVE YEAR PROJECTIONS (1994) (stating that this inventory was only introduced in 1993, and at the time of writing only three years results are available. Nevertheless, they do support the industry's own claims and projections in terms of significant and continuing emission reductions).

115. *See generally* CHEMICAL MANUFACTURERS ASSOCIATION, RESPONSIBLE CARE: PROGRESS REPORT 1994 (1995).

pears to provide more leverage to community relations personnel and plant managers seeking support for outreach and environmental activities. On the other hand, it has not resulted in ongoing dialogue with environmental groups, training in Responsible Care principles is not widespread, is seemingly ineffective below management level, and has not penetrated to product design. Rather than transforming the industry's environmental approach, Responsible Care has served to formalize and institutionalize existing environmental activities. Finally, some changes in industry behavior that the industry associations attribute to Responsible Care might have come about anyway as a result of other developments.[116] Overall, the record is a very mixed one.[117]

Responsible Care's many limitations mean that it is not appropriate for use as a "stand alone" or single instrument of environmental protection. However, it may still achieve far more than conventional regulatory approaches, provided it is used in an *integrated strategy* in conjunction with other instruments and a broader range of institutional actors.

B. *Environmental Management Systems and ISO 14001*

Environmental Management Systems ("EMSs") provide a framework for companies to identify, evaluate, and manage their environmental risks, enabling them to take a systematic and integrated approach to environmental management. Within that framework, companies introduce their own policies, objectives, programs, measurement and assessment methodologies. Responsible Care includes such a management system, though it covers a great deal more, including product stewardship, community dialogue, chemical distribution and transport safety, and various institutional mechanisms to facilitate technological transfer, mutual support, peer group pressure and environmental leadership.

By the mid 1990s, EMSs had become an important policy tool, enthusiastically embraced by a range of international, regional and national bodies seeking to develop "off the peg" manage-

116. For example process based regulations such as OSHA's Process Safety Regulation require changes in behavior consistent with those of the Responsible Care codes, and broader commitments by companies to TQM programs might also have lead firms to many of the same results.

117. *See* Jennifer Nash & Jennifer Howard, *Responsible Care's Mixed Record*, 5 TOMORROW: GLOBAL ENV'T. BUS. 12 (1996).

ment system standards.[118] The reasons for this enthusiasm are not hard to identify. Mounting evidence suggests poor environmental performance is attributable to system failure more than individual failure.[119] Most breaches of health, safety, and environmental standards are caused by factors such as lack of accountability, inadequate monitoring of performance, failures of communication, poor training and badly maintained equipment: all indicators of a failure to pay systemic attention to environmental performance and to take the policy, organizational, and administrative measures necessary for sustained improvement.

EMSs hold out the promise of overcoming such organizational pathologies. A range of studies suggests that enterprises that adopt such systems can achieve impressive environmental performance outcomes.[120] Approaches based on techniques of TQM[121] are claimed to be particularly successful. For example, the Global Environmental Management Initiative (GEMI) and a sub-committee of the President's Commission on Environmental Quality[122] have both examined the relationship between TQM and improved environmental performance.[123] On the basis of a number of sophisticated case studies, the latter concluded that

118. The most important of these are the British Standard BS7750, the European Union's Eco-Management and Audit Scheme (EMAS) and the International Standard Organization's ISO 14001, all discussed below.

119. *See, e.g.*, CHARLES PERROW, NORMAL ACCIDENTS: LIVING WITH HIGH RISK TECHNOLOGIES (1984) (providing striking evidence on major technological disasters suggests that 80-90 % of the failures relate to the management or organizational system and only 10-20 % are based on operator error or equipment failure); *See generally* DIANE VAUGHAN, THE CHALLENGER DISASTER (1995); PETER N. GRABOSKY, WAYWARD GOVERNANCE: ILLEGALITY AND ITS CONTROL IN THE PUBLIC SECTOR (1989).

120. *See* E. DONALD ELLIOT, *Environmental TQM: Anatomy of a Pollution Control Program that Works!*, 92 MICH. L. REV. 1840, 1843 (1994) (arguing that the powerful potential of EMS's to achieve dramatic results in improved environmental performance is amply demonstrated by the impressive achievements of a number of companies who took part in demonstration projects).

121. *See* Steve Hill *et al.*, *From Quality Circles to Total Quality Management, in* MAKING QUALITY CRITICAL: NEW PERSPECTIVES ON ORGANIZATIONAL CHANGE (A. Wilkinson Ilod & H. Willmott eds., 1995) (arguing that traditionally, TQM aspires to provide management with a framework "on which to build 'quality' into every conceivable aspect of organizational work. It is a business discipline and philosophy of management which institutionalizes planned and continuous business improvement).

122. (Quality Environmental Sub-Committee), *Total Quality Management: A Framework for Pollution Prevention Before the Quality Environmental Subcomm.* (President's Council on Environmental Quality ("PCEQ")) (1993).

123. *See* GLOBAL ENVIRONMENTAL MANAGEMENT INITIATIVE ("GEMI"), TOTAL QUALITY ENVIRONMENTAL MANAGEMENT (1992).

"TQM and Pollution Prevention are complementary concepts" and that "TQM offers an approach that all companies can use to achieve environmental improvements."[124] The study documents in considerable detail precisely how TQM tools could be applied to environmental issues.[125]

Worldwide, the most important development towards an EMS approach has been the introduction of the International Standards Organization's ISO 14000 series of standards, and in particular the environmental management standard ISO 14001 (and in the European Union, the similar but far from identical Eco-Management and Audit Scheme (EMAS)). ISO 14001 is a voluntary standard that is still in its infancy, having been formally endorsed in 1996 and gradually implemented over the next few years. Important questions about the role of this standard are still being addressed, including the appropriate relationship between ISO 14001 and environmental regulation.

ISO 14001 is based substantially on the ISO 9000 series on quality management. In broad terms, it calls for an understanding and identification of significant environmental issues, setting of targets, monitoring of progress, and continual review of how well the system is working. It involves documentation control, management system auditing, operational control, control of records, management policies, training, statistical techniques, and corrective and preventive action (see table 1 below). Companies may seek third-party certification to this standard if they so wish but are not bound to do so. They may simply use the standard for internal purposes. External pressures, rather than the ISO itself, will determine whether to seek certification.

124. *Id.*

125. The perceived advantage of an EMS approach, particularly one that is based on the principles of TQM, is threefold. First, it enables companies themselves to devise ways of reducing or preventing pollution. Rather than being constrained by highly prescriptive government regulations, an EMS-based approach encourages management itself to take the initiative and responsibility for deciding *how* to satisfy regulatory requirements. Second, EMS's serve to embed an environmental ethic in the Organization "so that systematic environmental management becomes a habit and an inherent part of company culture." Third, TQM implies a commitment to continuous improvement.

TABLE 1
ISO 14001 ENVIRONMENTAL MANAGEMENT SYSTEM ELEMENTS

1		**Environmental policy**
2		**Planning**
	2.1	Environmental aspects
	2.2	Legal and other requirements
	2.3	Objectives and targets
	2.4	Environmental management program(s)
3		**Implementation and operation**
	3.1	Structure and responsibility
	3.2	Training, awareness and competence
	3.3	Communication
	3.4	Environmental management system documentation
	3.5	Document control
	3.6	Operational control
	3.7	Emergency preparedness and response
4		**Checking and corrective action**
	4.1	Monitoring and measurement
	4.2	Non-conformance and corrective and preventive action
	4.3	Records
	4.4	Environmental management system audit
5		**Management review**

A particular attraction of this type of systems-based approach is its perceived capacity to move corporate environmental thinking from the compartmentalization that characterized the earlier generation of pollution control (vertical standards addressing discrete areas of activity) to a horizontal standard that cuts across an organization's functions and integrates environmental considerations with other corporate activities. Under the latter approach "cost, efficiency, productivity and environmental performance all become part of the same decision making process."[126]

Moreover, when incorporated into regulation, a systems approach, unlike traditional command and control, can

126. Alan Knight, *International Standards for Environmental Management: the Work of ISO/TC 207*, INDUS. & ENV'T, July 1994, at 45.

encourage continual improvement and environmental stewardship on the part of industry, and produce a commitment to go "beyond compliance" with existing regulation.[127] It also enables firms to devise their own methods to reduce or prevent pollution rather than being constrained by prescriptive government regulations. More broadly, proponents claim that systems-based standards can change a participating enterprise's environmental protection culture.

Whether systems-based approaches to regulation deliver such substantial benefits depends greatly upon the characteristics of the management system itself, on the effectiveness of its implementation, on the political context, and on a variety of other factors that are examined below through the lens of the ISO 14001 standard. In doing so, we recognize that ISO 14001 is certainly not the only EMS available and very possibly not even the best (as we will see below, EMAS is in some respects, much more ambitious). It is nevertheless the single management system recognized internationally and the basis on which regulators are most likely to build: overcoming its limitations by adding further components under a process known as "ISO Plus."

1. Can ISO 14001 Deliver Smarter Regulation?

ISO 14001 need not be used as a regulatory instrument. Indeed it was designed principally as a management tool to improve environmental performance. At least initially, ISO certification will be used principally to gain an advantage in the international market, where major corporations are likely to insist upon certification as a condition of trade. However, many organizations and their representative bodies see the ISO standard as having regulatory implications. This perspective is not confined to any particular country or industry sector. Throughout the developed world there is a considerable industry push for an easing of the regulatory burden. Industry views ISO 14001 as providing a considerable opportunity to bring this about.[128] Likewise, many reg-

127. *See* Ulrich Guntram & Pieter Winsemius, *Responding to the Environmental Challenge,* BUS. HORIZONS, Mar./Apr. 1992, at 12.

128. For example, in the United States, at least three possible models for integrating ISO 14001 with government regulation are being contemplated: customized (industry specific) environmental regulations for all environmental media relying (in part) on ISO 14001 certification to confirm that a company is meeting these new multi-media regulations; reduced compliance, reporting and monitoring requirements by government in return for demonstrated commitment to improved environ-

ulators see attractions in using EMSs as a regulatory tool, both because it promises better environmental outcomes and because it potentially places fewer demands on regulatory resources.

ISO 14001 might be used in a variety of ways either to replace or to complement government regulation.[129] International standards can serve as the basis for environmentally preferable commercial influences. But, by far the most important use would be its capacity to serve as a surrogate for conventional command and control regulation: in effect acting as a form of process-based regulation that would provide regulatees with considerable autonomy. Companies that committed themselves to implementation of ISO 14001 (and the internal company processes and systems it implies) would be exempted from all or part of the regulatory requirements that would otherwise be imposed. For example, a firm that committed itself to adopt ISO 14001 and to meet certain other requirements - perhaps involving community consultation and disclosure of regular environmental audits - might be granted license fee reductions, an easing off or waiver of regular inspections, or even (most contentious of all) exemption from the sort of detailed prescriptive requirements that characterize U.S. environmental regulation. This result might be

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mental performance (one element being ISO certification); and greater EPA flexibility in regulating a specific source "in exchange for a commitment on the part of the regulated entity to achieve better environmental results than would have been obtained through full compliance with all applicable environmental regulations." *Agency Resists "Light Touch" for sites with ISO 14001, EMAS*, ENDS REP. 266, at 3 (Mar. 1997) (noting the resistance of the Environment Agency in the UK to industry and government pressure for sites certified to environmental management standards to be given automatic relaxation in regulatory oversight. Rather the agency insists that such relaxation be based on a more sophisticated assessment of a site's pollution potential).

129. For example, it might be used as a mechanism for avoiding liability or to justify the mitigation of penalties. In the USA, particular emphasis has been placed on "compliance assurance" programs in determining whether penalties should be mitigated. The rationale is that most environmental offenses are committed by corporations which, as artificial legal entities, have "no body to kick and no soul to damn". John C. Coffee, Jr., *No Soul to Damn: No Body to Kick: An Unscandalized Inquiry into the Problem of Corporate Punishment*, 79 MICH. L. REV. 386 (1981). Under what circumstances then, should the misdeeds of individual employees be attributed to the corporation? One answer is to say that the implementation of an adequate compliance assurance program (of which an environmental management system is an essential component) is a reasonable way for the corporation to stay within the law. If an individual employee breaches the law in contravention of such a program, liability should arguably stay with the individual, and should not be attributed to the corporation. A halfway point would be to make the corporation liable for the misdeeds of the individual but to allow the compliance assurance program to be pleaded in mitigation at sentencing.

achieved by legislation, as a term of a license or permit,[130] or through an environmental covenant.[131] The result might be viewed as a shift from prescriptive regulation to regulatory flexibility implying *de facto* "privatization of compliance." In the words of a major player, "[e]nvironmental management systems [standards] are an opportunity for moving from the command and control and punish regulatory approach to one of self-responsibility and cooperation.[132]

Unsurprisingly, there is considerable support from industry, across a range of developed nations, for this sort of approach.[133] In Europe, the chemical industry hopes that those who adopt EMS under either ISO 14001 or under EMAS (with ISO 14001 as a component part of it), coupled with third-party certification, will in exchange receive relaxed conventional regulation.[134] Similarly in the U.S., the push for regulatory flexibility in return for ISO certification has been so strong that the CMA has suggested that "alternatives to command and control - possible regulatory relief from inspections, and reporting- will be a bigger pull [towards certified EMS] in the United States than market pull."[135]

In essence, this is a plea for a substantial decrease in the state's role in regulation. On the positive side, those who argue for this approach are correct that it is the enterprise itself that has the greatest capacity for making a systems approach work to optimal effect. Moreover, enterprises are more committed to rules they write and enforce themselves, and such rules can be tailored to

130. Arguably, the best existing example of a broad, flexible licensing requirement on this model is that being developed by the state government of Western Australia. For a description of the model see the WESTERN AUSTRALIA DEPARTMENT OF ENVIRONMENT PROTECTION, ACHIEVING BEST PRACTICE ENVIRONMENTAL MANAGEMENT (1996). The Dutch integrated system has also been successful; for a description of this system see M. Aalders, *Regulation and In-Company Environmental Management in the Netherlands*, L. & POL'Y 75 (1993).

131. *See id.* (describing the Dutch's use of an environmental covenant in the Dutch system).

132. *Chemical Firms use EMAS, ISO 14001 in Push for Deregulation,* ENDS REP. 254 at 6 (Mar. 1996) (quoting Nigel Savginson, Environmental Coordinator for EXXON in the United Kingdom).

133. *See* Kara Sissell & Rick Mullin, *Fitting in ISO 14000: A Search for Synergies,* CHEM. WK., Nov. 8, 1995 at 39; *See also From Command and Control to Self Regulation: The Role of Environmental Management Systems,* BUREAU OF NAT'L AFFAIRS INT'L ENV'T DAILY, Mar. 4, 1997, at 227.

134. *See, e.g., Chemical Firms Use EMAS, ISO 14001 in Push for Deregulation,* ENDS REP. 254, Mar. 1996, at 5-6.

135. *Id.* at 6 (quoting John Master, consultant to the CMA).

match each enterprise's needs and functions.[136] Given extremely limited compliance resources, devolving process-based regulation largely to the industry itself may seem an attractive means of monitoring environmental performance on a continuous basis. However, experience suggests that regulation entrusted to the industry itself, without outside scrutiny or oversight, is rarely capable either of overcoming the gap between public and private interest, or of providing the credibility necessary for public acceptance.

There are three reasons why ISO 14001 (at least without some forms of external reinforcement) is likely to be a less-than-adequate regulatory tool. First, it suffers from a number of serious internal weaknesses resulting from the political compromises involved in its inception.[137] Second, serious risks of implementation failure exist. Third, the costs of implementing ISO 14001 may exceed the economic benefits, at least in the short term, leaving firms who are offered benefits for embracing it (e.g. regulatory flexibility) with a temptation to merely "go through the motions." Moreover, unlike Responsible Care, there is no industry association or peer group pressure to drive genuine environmental improvements. ISO 14001's internal weaknesses can be summarized as follows:

1) Except for committing to continual improvement and demonstrating a commitment to compliance with applicable legislation and regulations, the standard does not establish absolute requirements for environmental performance. Widely differing levels of environmental performance will result, even within the same industry sector, even though all established a management system that complies with ISO 14001. As Joe Cascio, Chair of the United States Technical Advisory Group to ISO Technical Committee 207, states "ISO 14000 isn't about compliance, it's

136. *See generally,* IAN AYRES & JOHN BRAITHWAITE, RESPONSIVE REGULATION: TRANSCENDING THE DEREGULATION DEBATE (1992).

137. The ISO 14000 series evolved as a consequence of two events: the Rio Earth Summit in 1992, which brought increasing pressure for new mechanisms to address environmental degradation, and the Uruguay round of GATT negotiations, from 1986 on, which focussed attention on the need to reduce or eliminate non-tariff barriers to trade. These two goals are not necessarily complementary. A central question has become: is it possible to create uniform environmental standards that do not erect trade barriers but instead facilitate trade and remove such barriers? ISO 14000 purports to provide an answer to this question, offering a standard that both facilitates trade growth *and* environmental protection. However, as we shall see, the outcome involves a number of compromises which seriously prejudice ISO 14001's standing as a tool for environmental protection. *See* Naomi Roht-Arriaza, *Shifting the Point of Regulation,* 22 ECOLOGY L. Q. 479, 506-507 (1995).

about management. It will make no statement regarding what is desirable for the environment. Neither will it lay out environmental goals, performance levels or technology specifications."[138]

2) Even the commitment to continual improvement must not be taken too seriously. The standard merely states that "[t]he rate and extent of [continual improvement] will be determined by the organization in the light of economic and other circumstances . . . the establishment and operation of an EMS will not in itself, necessarily result in an immediate reduction of adverse environmental impact." Moreover, ISO does not require a commitment to pollution prevention but only "prevention of pollution," a term of art with a much narrower meaning.[139]
3) Where conformance by a third party is sought,[140] credibility will depend substantially upon the qualifications and approach of the third party certification bodies responsible for verifying compliance of an enterprise's EMS against the requirements of ISO 14001.[141] There is a serious danger that many auditors, whose principal training does not relate to environmental standards, but who have either a systems or a quality assurance background, will simply bring their existing skills (and limitations) to accrediting and auditing ISO 14001. This may easily result in a "box ticking" mentality, and a mechanistic approach that ignores or downplays important areas that only professional judgment is capable of identifying.[142]

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138. Geoff House, *Raising the Green Standard,* IND. WK., July 16, 1995, at 73; *See also Chemical Firms Use EMAS, ISO 14001 in Push for Deregulation,* ENDS REP. 254, Mar. 1996, at 6 (quoting, John Master, a consultant responsible for the U.S. Chemical Manufacturer Association's environmental management system processes, "the experience in the US has been that ISO 9000 has not done anything good in terms of the quality of products. It has become a documentation process, a paper-based process. It serves the purpose of putting in place a management system to achieve a specified level of quality, but does not say anything about what that level of quality is.").

139. *See* Naomi Roht-Arriaza, *Shifting the Point of Regulation,* 22 ECOLOGY L. Q. 479, 505-507 (1995) (suggesting that the term "prevention of pollution" is used in a context whereby it might be possible to satisfy it by end of pipe approaches).

140. Although ISO 14001 has been written for third party conformance certification (with an option of self-certification), many enterprises which adopt it may choose not to seek certification unless there is a strong commercial reason for doing so (e.g. marketing advantages, meeting requirements of trading partners, or conceivably, discharging the legal requirement of due diligence). In the absence of such reasons, enterprises are unlikely to seek certification, given the often very considerable expense involved. There is the further possibility, to which we return, of governments requiring or providing incentives for certification in certain circumstances.

141. For further analysis on this issue, see Neil A. Gunningham, *Environmental Auditing: Who Audits the Auditors?,* 10 ENVTL. PLAN. L. J. 229.

142. For example, in Australia, of the first twelve companies involved in a certification pilot program, eleven are quality assurance specialists, with only one environ-

4) ISO 14001 does not require firms to make public their progress in attaining the objectives and targets they set under the standard. In contrast, it is a requirement under the EMAS for participating firms to provide a regular environmental statement detailing their activities, the major environmental issues these activities raise, a summary of pollution emissions and waste generation, and an evaluation of overall environmental performance.[143] Taken together, the verifiers' seal of approval and the validated environmental statement provide the public with two important indicators of, and insights into, the performance of registered companies. The lack of any comparable mechanism providing transparency and accountability under ISO 14001 is a striking omission.[144] ISO 14001 also lacks any credible requirement for genuine dialogue with the community.[145]
5) As a change agent, ISO 14001 is limited by the fact that all normative, or visionary (i.e. consciousness changing) material has been removed from its content at the drafting stage. As a result, companies are encouraged to develop objectives and targets without any clear vision of the new environment that

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mental consulting company. Moreover, the Quality Assurance Society of Australia has the responsibility for registration of environmental auditors. A related concern is that there will be an undue focus on detail, again driven by a quality assurance approach. This has indeed been the experience with the ISO 9000 series of quality assurance standards. It is also noteworthy that at present, it is only organizations that will be accredited, and not the individuals within those organizations who do the certifying.

Already, tensions are being generated as a result of perceived differences in standards being applied by different types of auditors, or auditors operating in different countries. For example, under EMAS, a disagreement about the stringency of German verifiers as contrasted with those elsewhere in the European Union, is threatening to call into question the credibility of the whole scheme. *See German Approach to EMAS Provokes Credibility Worries,* ENDS REP. 255, Apr. 1996, at 7-9. Comparability can only be achieved from uniform international interpretation of the requirements of ISO 14001 and 14024, consistent instruction of course providers, uniform qualification of auditors and consistent application of guides.

143. It will generally include specific performance data, for example, emissions and improvement targets. This statement is intended to inform both the authorities and the public of the firm's activities. It must be verified by a third party. As of November 1995 there were still open issues under EMAS as to exactly what has to be included in the environmental statement.

144. Under ISO 14001, firms are required to conduct periodic audits, depending on their environmental related activities and the results of previous audits. It is important to note, however, that the audit only addresses the EMS itself, *not* environmental performance *per se*, and that, further, the results of the audit remain confidential.

145. ISO 14001 requires a procedure for dealing with the public without specifying what it should be. For example, if a company notes and files complaints from members of the public, this might satisfy the requirement.

> would emerge as a result of these initiatives. There is, for example, only one reference to sustainability in the entire document.

There is no requirement, but merely an option, for an independent third-party audit under ISO 14001.[146] This is particularly unfortunate given the evidence (based on the experience of companies registering under BS7750 or EMAS) that external audits have considerable value.[147] Under EMAS, third party verifiers have found "'many' errors in the calculation and measurement of the factual data presented in environmental statements."[148] This further underscores the unreliability of anything short of independent oversight. Whether commercial pressures will push most companies to seek third-party audits rather than self-audits remains to be seen.

The success stories concerning the contribution of EMS must be balanced against the evidence that these benefits can *only* be obtained if the system is properly implemented. Indeed, superficial or tokenistic attempts to introduce an EMS may be totally ineffective and even counterproductive.[149] The evidence suggests that any enterprise planning to introduce a TQM system for the control of environmental degradation will need:

1) Top down integration with the normal business planning cycle
2) Compatibility with the corporate [environmental] direction and priorities
3) Meaningful participation by all levels of the organization in plan development
4) Review and correction processes at appropriate organizational levels
5) Planned activities that result in, meaningful and measurable tasks and targets at the individual level, forming part of the annual staff performance appraisal
6) Regular review of the plans to ensure adequate completion[150]

However, the successful incorporation of all of these elements into an EMS is problematic; the dangers of implementation fail-

146. Certification may be granted either by an internal auditor or externally.

147. *See Benefits and Shortcomings of EMAS Revealed as First Five Sites Win Registration*, ENDS REPORT, Aug. 1995, at 18, 19.

148. *Id.* at 21.

149. *See* John C. Coffee, *"No Soul to Damn: No Body to Kick": A Unscandalized Inquiry into the Problem of Corporate Punishment*, 79 MICH. L. REV. 386, 388-407 (1981).

150. Nicholas Burke, Gaining Organizational Commitments to OH&S by Integrating Safety into Your Business Plans 3 (Mar. 9-10, 1994) (paper presented at Proactive OH&S Management Conference in Sydney, Australia).

ure must not be underestimated.[151] For example, TQM presents a challenge to conventional management techniques. A lack of understanding, or more likely, a lack of commitment (in terms of effort or finance) to the TQM process among management will seriously reduce the likelihood of success. There is also the serious possibility that, in some circumstances, enterprises lack the commitment to overcome the initial implementation difficulties.

Finally, ISO 14001 has less chance of functioning as an effective self-regulatory or co-regulatory mechanism than does Responsible Care. Responsible Care is structurally very different from ISO 14001. In the case of the former, the major players come to the conclusion that "we are only as strong as our weakest link" because a major disaster caused by any one of their members would taint the others and seriously damage the future of the entire industry. So the industry as a whole has an interest in making self-regulation work *across the entire industry sector.* Moreover, a sophisticated set of mechanisms has been developed at the industry association level to deliver sector-wide self-regulation and to police the performance of recalcitrants.

In contrast, ISO 14001 is intended for use by individual enterprises with no wider goal of improving environmental performance across an entire industry sector and with no mechanism for achieving that goal even if it existed. Some ISO 14001 participants will have a self-interest in adopting such a system and improving their environmental performance voluntarily. The promise of gaining greater cost efficiencies, developing and marketing globally new environmental technology, or reaping the public relations advantages of environmental leadership may be sufficient in some circumstances. However, commonly they will not. As with Responsible Care, the gap between short-term objectives, including profit maximization, and long term environmental goals will be too large. Specifically, there are many circumstances under which the economic benefits of investing in environmental protection are tenuous or non-existent and the costs to business of implementing environmental protection measures (including effective EMSs) will not be offset by any resulting savings from improved economic performance.[152] Firms are tempted to adopt ISO 14001 solely in order to gain the bene-

151. *See* Interview with R. Chang entitled TQM Fever presented by Business Report, ABC National Radio (July 1995).

152. Arguably the single largest impediment to improved environmental performance is the emphasis of corporations on short-term profitability.

fits of regulatory flexibility, public relations benefits, or both without committing the resources necessary to deliver improved environmental performance.

From all of the above one might reasonably conclude that EMSs, used as a regulatory tool, provide both opportunities and challenges. When systems work effectively, they can achieve far greater leaps in environmental performance than are imaginable under conventional regulation - delivering continual improvement, transforming the culture of an organization towards its environmental responsibilities, and taking it beyond compliance with its legal duties. Moreover, because systems address environmental issues very broadly, they will encourage companies to address environmental problems that fall between the gaps of existing environmental regulations - a considerable advantage over conventional regulation.

However, these gains are not easily achieved. Considerable pitfalls exist; firms may develop "paper systems" that merely keep the regulators off their backs without delivering the promised environmental benefits. Even firms genuinely committed to this approach may falter at the point of implementation, thus failing to deliver environmental outcomes and perhaps falling below standards mandated by conventional regulation. As with Responsible Care, the challenge for policy design and regulatory strategy is to harness this initiative's considerable promise without succumbing to its limitations.

ISO 14001 is the product of hard fought international negotiations. Given the depth of the divisions between the United States and the European Union,[153] a renegotiation of the present compromise seems unlikely, at least for the foreseeable future. However, ISO 14001's limitations need not constrain regulatory reformers. Designing more flexible, system-based regulation for leading enterprises, specifying parameters far more demanding than those contained in ISO 14001 (i.e. "ISO Plus"), is entirely realistic. In this manner, enterprises wishing to go beyond compliance with existing laws could be offered a more flexible, cost-effective systems-based alternative, of which an "off the shelf" management system, including but not limited to ISO 14001, could form a part, but not the whole.

153. *See* Naomi Roht-Arriaza, *Shifting the Point of Regulation*, 22 ECOLOGY L. Q. 479, 504-07 (1995).

In the chemical industry sector, considerable thought has already gone into the means by which the management system and verification components of Responsible Care might be integrated with the requirements of ISO 14001, thereby avoiding duplication. For example, a number of companies have carried out "gap" analysis to see what they would have to do under their existing (Responsible Care driven) management systems to qualify for ISO 14001. A consensus is emerging that ISO 14001 can be complementary to, and integrated with, Responsible Care (See Box 2 below) and that ISO 14001 may be used to implement Responsible Care objectives.[154]

VI.

TOWARDS A BROADER REGULATORY MIX

The following sections explore the questions of how to design regulation appropriate for those who choose to adopt either a systems-based approach such as ISO 14001 or sign on to Responsible Care or both. How can regulators maximize the advantages of ISO 14001 (or similar management systems approaches) or Responsible Care, while compensating for their weaknesses? How can regulators best move from adversarialism to partnership and from prescriptive to flexible and responsive regulation?

Traditional approaches to chemical industry regulation have serious shortcomings, both for the industry itself and for the environment. Two major initiatives have evolved: Responsible Care, which is essentially a form of industry association driven self-regulation, and ISO 14001 and similar standards, which is a management systems approach, functioning at the level of the individual enterprise. If integrated into a regulatory scheme, ISO 14001 is best categorized as a form of process-based regulation, as an alternative means of achieving compliance implying considerable "regulatory privatization." Both Responsible Care and ISO 14001 have a claimed capacity to transcend the limitations of traditional approaches. Yet, they are also beset with problems so serious that in their present form, and functioning in isolation, neither is likely to deliver substantial environmental benefits.

However, providing they are integrated into a broader policy mix, both of these mechanisms have the potential to make a substantial contribution to environmental policy and to take the

154. *See, e.g., The Responsible Care, ISO 14001 Intersection*, CARELINE, Apr. 7, 1997, at 8.

Box 2

COMPARING ISO 14001 AND RESPONSIBLE CARE

- ISO 14001, like ISO 9001, 9002 and 9003 is largely about documentation and document control.
- ISO 14001 covers about twenty percent of the 152 code elements of the Canadian Chemical Producers Association's (CCPA's) Responsible Care program, but does not address employee health and safety, community involvement, Product Stewardship, second-party assessments, new product development, transportation, former sites, or proactivity in public policy development.
- CCPA's Responsible Care guiding principles, policies, codes, and programs cover and exceed - in intent - all of the elements of ISO 14001.
- ISO 14001 is much more prescriptive than Responsible Care with respect to elements of an environmental policy, environmental training, inventories, environmental aspects of operations, document control procedures, management roles and responsibility, and the need for setting environmental targets.
- ISO 14001 is designed so that auditors with widely varying backgrounds and experience can consistently audit a wide range of organizations against a clearly defined standard.
- CCPA's Responsible Care verification process is a much more subjective evaluation of how a company has applied the ethic in its standard setting, or benchmarking, processes and rationale, documentation systems, auditing processes, and resourcing.
- ISO 14001 has the potential to provide added value to CCPA members above what they might choose to do for compliance with phase one of Responsible Care. It can be used as a benchmark for environmental management systems as well as a tool for continuous improvement of a company's EMS process.

SOURCE: Canadian Chemical Manufacturers Association, Primer on Responsible Care and ISO 14001.

chemical industry "beyond compliance" with existing legislation and towards sustainability. This article next identifies the appropriate ingredients of that mix and how they may best be combined to achieve optimal economic and environmental outcomes. Despite the different origins and different (but overlapping) purposes of Responsible Care and ISO 14001, the means of overcoming their weaknesses and of building on their strengths have much in common.

In redesigning regulation, it is important to recognize that chemical companies are not alike. Different strategies, and mixes of strategies, will be appropriate for different types of enterprises and circumstances. As indicated earlier, chemical companies fall into one of three broad categories. First, there are the enterprises, many of which are transnational corporations, manufacturing and supplying chemicals on a large scale. These enterprises are sophisticated and profitable. They have substantial plants, are readily identifiable, and have a high public profile. They have both the capacity and the inclination to think proactively and to recognize the close link between their own future and that of the industry. They recognize, in Joe Rees' terms, that they are "hostages of each other."[155] Second, there are the small suppliers and buyers who both lack sophistication and size and are closely integrated with and highly dependent upon the first category of companies for their survival. Third, there are the specialty chemical manufacturers: independent operators who usually use batch rather than continuous processes and who fill market niches and develop new products, responding quickly to customer specifications.[156] These companies undertake some, but by no means all, of their work as subcontractors for the larger companies.

Strategies for dealing with each group are examined in turn, beginning with the most important: the large corporations which make up the large majority of signatories to Responsible Care and the group which, by reason of size, is the most likely to consider utilizing a management systems approach under ISO 14001.

155. JOSEPH V. REES, HOSTAGES OF EACH OTHER: THE TRANSFORMATION OF NUCLEAR SAFETY SINCE THREE MILE ISLAND (1994).

156. Distributors are harder to categorize than most other groups within the chemical industry. They range from very large and sophisticated companies to very small operators. On the whole, the sector is a very profitable one and the number of economically marginal operators is likely to be very low.

A. *Strategies for Regulating Large Chemical Companies*

Large chemical corporations have long complained that traditional regulation is seriously flawed and, in particular, that it does not facilitate achievement of improved environmental performance at the least cost. Viewed as regulatory instruments, proponents see both Responsible Care and ISO 14001 as mechanisms that can effectively mitigate this problem. Neither mechanism is a complete substitute for government regulation, but either might nevertheless justify a considerable easing of the regulatory burden (hereafter referred to as "regulatory flexibility"). In each case, a business that commits itself to adopting Responsible Care or to implementing ISO 14001 might be given considerable autonomy with regard to *how* it achieves improved environmental performance. The central vehicle intended to ensure that such improvement does indeed result is the implementation of an EMS. An EMS is the essence of ISO 14001 and an important means of discharging key components of Responsible Care (though Responsible Care also emphasizes community involvement, product stewardship, and an environmental ethic promoted by the industry association).

If a commitment to implement a management system were to substantially replace the requirements of conventional regulation, participating enterprises would be given the flexibility that large business, in particular, needs to achieve cost-effective environmental performance.[157] EMSs, whether under Responsible care or ISO 14001, have the potential to achieve continuous improvement in environmental performance, to entrench environmental considerations within the decision-making structure, and to take enterprises "beyond compliance" with existing regulation. Finally, transferring considerable responsibility from the regulator to the enterprise itself benefits the regulators by freeing up scarce resources. The result would be "regulating at a distance" without the heavy hand of highly directive regulation that has characterized past regulator-regulatee interactions.

All of this should be attractive to all sides: to enterprises (in terms of autonomy and achieving cost effectiveness) and to regulators, policymakers, and environmentalists in terms of better environmental outcomes (with fewer regulatory resources). Yet,

157. The Yorktown experiment is the classic example of this approach. The considerable autonomy implied by management-driven approaches also has another important benefit: codes or systems derived by industry have much greater credibility within industry and likelihood of acceptance by it than those imposed from outside.

considerable pitfalls exist. Firms may be tempted to adopt Responsible Care or ISO 14001 to get the regulators off their backs, to gain the benefits of incentives offered for adopting such systems, to obtain public relations benefits, or all of the above. The result may be tokenism and a proliferation of perfunctory "paper systems" that have little benefit in terms of improved environmental performance. Even worse, regulators may not be able to distinguish between paper systems and a real EMS. Even enterprises that genuinely embrace a management system approach may do so ineffectively, and so fail to deliver promised environmental outcomes. Finally, ISO 14001, contains, as described previously, inherent flaws. Thus, proposals for regulatory flexibility implying a considerable degree of autonomy and self-regulation (or "privatization of regulation") inevitably raise concerns from environmentalists, public interest groups, and regulators as to whether business will betray such trust - either deliberately or through incompetence.

Recognizing the serious risks as well as the benefits implicit in proposals for regulatory flexibility, the central challenge is to design a strategy whereby one may gain the maximum benefits of Responsible Care or a management systems approach while minimizing the shortcomings of such approaches. Crucial questions are: on what outcomes should government insist; how can these be measured; who will do the measuring; to what extent and in what ways will environmental, community, and public interest groups be involved in the process; how can the burden on government resources be reduced; what incentives need to be provided for industry to embrace regulatory flexibility; and what will happen if enterprises don't live up to their commitments?

A number of measures are prerequisites for government to successfully regulate large companies at a distance, giving them the flexibility they demand, while improving both environmental and economic outcomes and community acceptance. These are:

1) Measuring environmental outcomes by independent and transparent performance indicators.
2) Independent third-party oversight underpinned by access to information.
3) Community empowerment, including the transparency and institutionalized dialogue necessary to bring this about.
4) Government oversight and an underpinning of effective sanctions.
5) Credible incentives for industry participation.

In seeking to design an optimal approach, there is no need to be constrained by the limitations of either ISO 14001 or Responsible Care in their present forms. The quid pro quo for regulatory flexibility on the part of government will be co-regulation which builds on, but is not limited to, the basic elements of ISO and Responsible Care (ISO or Responsible Care "Plus").

1. Measuring Environmental Outcomes under Environmental Management Systems

We begin by examining the potential role of Environmental Management Systems ("EMSs"). How can one ensure that EMSs are as self-monitoring, self-correcting, and self-improving, as their proponents claim? How can one ensure that these systems do not, intentionally or otherwise, produce the trappings of self-regulation without delivering the promised outcomes in terms of a culture shift, a commitment to continuous improvement, and as a result, improved environmental performance?

A serious danger of relying on ISO 14001 alone is its emphasis on processes but not outcomes. Similarly, Responsible Care, rather than evaluating actual performance, focuses on progress in implementation of the system itself.[158] It would be possible under both regimes, for enterprises to satisfy the base requirement of system implementation *without improving upon the levels of environmental performance specified by existing regulatory regimes.*

If regulators are to allow a more flexible regulatory approach for those adopting an EMS, then they must insist that a fundamental term of the permit, agreement, or other instrument under which the enterprise operates is a commitment to performance outcomes[159] demonstrably better than those required by existing legislation. Specifically, to ensure that EMSs and the Responsi-

158. David Rotman, *Pushing Pollution Prevention*, CHEMICAL WEEK, July 17, 1991, at 30, 32.

159. The advantages of performance-based reporting have been summarized as being that it: requires clear goals that relate to the issues with which the organization exists to deal and that society expects it to deal; allows improved accountability, as customers can make judgments about its performance in dealing with those issues; gives clear guidance to all levels of the organization as to what they should be trying to achieve (although not how to achieve it); allows and encourages organizational learning and improvement; and enables comparisons between organizations. *See* Charles Meredith, Process or Outcomes? Defining the Most Useful Measure of Environmental Performance 2-3 (Sept. 30, 1996) (Paper presented at the 1996 Australian Academy of Science Fenner Conference on the Environment at the University of New South Wales, Sydney, Australia).

ble Care codes deliver the results of which they are capable, governments must require participating firms to commit themselves to a number of performance related bottom lines.

This is easier to state in the abstract than to implement in concrete terms. First, there are difficulties in measuring environmental performance (i.e. in specifying appropriate performance indicators). Second, there are dangers that specified indicators may encourage pollution control and end-of-pipe solutions rather than pollution prevention and continuous improvement.

a. Benchmarking and Performance Indicators

Evaluating actual performance, rather than just progress in implementation of the system or codes of practice, requires the generation and collection of objective data that validates a company's activities against milestones that enable all companies to be compared against each other ("benchmarking"). If these figures are made public, benchmarking will create important incentives for improvement. Equally important, the relevant data must be capable of demonstrating that each participating enterprise is going beyond compliance with outcome-based regulatory requirements. The data should be presented so as to enable a company's performance to be understood by local communities.

Although the situation is changing rapidly, only limited progress has so far been made towards developing and implementing such performance indicators necessary to identify opportunities and assess actual achievements against reduction goals. As the European Chemical Industry Council ("CEFIC") acknowledged at its General Assembly in 1996, the lack of comparable data is seriously hampering the industry's search for credibility. But so far, its search for solutions is only in its early stages.[160] In the case of Responsible Care, Union Carbide Chief Executive Officer, Robert Kennedy, summarized:

> [O]ur voluntary reports are a random walk. Companies use different reporting formats, data bases, time frames and definitions. As a result, the work we are doing has not received the recognition it deserves. Ultimately, we need to develop a system of uniform reporting standards around the world, a common vocabulary, accepted definitions and practices, a system that can be independently verified - plant by plant, country by country - much as financial auditing does for our balance sheets today. It won't be easy, especially when proprietary information is involved. But the

160. ENDS REPORT, Aug. 1996, at 21.

value of an independent, certifiable reporting system will far exceed the cost and trouble of developing one.[161]

Performance indicators capable of meeting the criteria identified above have not yet been developed, though considerable effort is being expended in furtherance of this goal,[162] including efforts to develop a Environmental Performance Evaluation under the ISO 14000 series.[163] Whether it is possible, to develop a more far reaching general measure of environmental performance applicable to different firms with different processes and products remains to be seen.[164] However, Ditz and Ranganathan,[165] advance this issue significantly, arguing for the adoption of four standards of environmental performance: materials use, energy consumption, nonproduct output, and pollutant releases that emphasize resource efficiency, pollution prevention and product stewardship. These standards could be used

both inside and outside company walls. Just as a company's financial statement can be relied upon to provide information that is comparable, transparent, and complete, the EPIs [Environmental Performance Indicators] of a company could be used to rate its environmental performance. In this way, EPIs can provide the in-

161. Robert D. Kennedy, Sustainable Development - The Hinge of History 3-4 (May 28, 1992) (paper presented at the Industry Forum on Environment and Development in Rio de Janeiro, Braz. and quoted in Neil Gunningham, *Environment, Self-Regulation, and the Chemical Industry: Assessing Responsible Care,* 17 L. & POL'Y 57, 71 (1995)).

162. See in particular the work of the U.S. MULTISTATE WORKING GROUP ON ENVIRONMENTAL MANAGEMENT SYSTEMS, DRAFT VOLUNTARY GUIDELINE MATRIX FOR IMPLEMENTATION AND EVALUATION OF ISO 14001 ENVIRONMENTAL MANAGEMENT PILOT PROJECTS, (May 1997). The matrix includes a framework for measuring the results of EMSs in the following categories: environmental performance; environmental conditions; environmental compliance; management framework; pollution prevention; costs and benefits; and stakeholder involvement.

163. EPE is a process intended to provide organizations with a mechanism for understanding their past and present environmental performance as compared to the intended environmental performance of the organization. *See* ANNEXES TESTING COMMITTEE, ISO 14031 ENVIRONMENTAL PROTECTION EVALUATION, DRAFT ATC REPORT, U.S. SUB TAG 4 (Sept. 1996).

164. Here, key questions are: what comparisons can be made with data on incidents and impacts of chemical operations and substances; from whom should data be gathered; and what health, safety and environment outcomes should we measure? *See* James Smith, Measuring Health, Safety and Environmental Performance: Why, What, and Whose? (Feb. 21, 1994) (summary of a paper presented at the ACIC Convention in Leura, NSW, Australia).

165. DARYL DITZ & JANET RANGANATHAN, MEASURING UP: TOWARD A COMMON FRAMEWORK FOR TRACKING CORPORATE ENVIRONMENTAL PERFORMANCE (1997).

formation necessary to measure and motivate progress towards environment goals.[166]

Five interim measures may reassure regulators and others that regulatory flexibility does not result in backsliding. First, regulatory "cap" proposals in the U.S.[167] purport to provide that compliance with all "existing and reasonably foreseeable" regulatory requirements would be the baseline requirement for regulatory flexibility and autonomy.[168] In the case of new facilities, the "cap" would be the lesser of allowable levels of releases or best practices in that industry.[169] Second, indicators could be developed based on data required to be reported and measured under existing government programs. For example, in the U.S., the CMA claims to have external performance measures for five of its six Codes of Practice.[170] These include the toxics release inventory (used as a measure of pollution prevention), Occupational Health and Safety Administration (OSHA) figures (used as a measure of safety performance), and the Department of Transportation's hazardous materials transportation incident database (as the Distribution Code Performance Measure). Third, agreements may be negotiated at the level of each individual plant or company level (if offsetting is allowed)[171] through its license, permit, or an environmental covenant. Under such agreements, an enterprise, in return for regulatory flexibility, would commit itself[172] to an implementation schedule for identi-

166. *Id.* at vii.

167. These approaches contemplate an immediate exit from the current regulatory system for selected major sources replacing it with contracts tailored to the source's particular circumstances. *See* William F. Pederson, *Can Site-Specific Pollution Control Plans Furnish an Alternative to the Current Regulatory System and a Bridge to a New One?,* 25 ENVTL. L. REP. 10486 (1995).

168. For example, any project eligible for the XL Program must be "able to achieve environmental performance that is superior to what would be achieved through compliance with current and reasonably anticipated future regulation." 60 Fed. Reg. 27282, 27287 (1995).

169. This is the proposal made by the Aspen Institute Report. ASPEN INSTITUTE, THE ALTERNATIVE PATH: A CLEANER, CHEAPER WAY TO PROTECT AND ENHANCE THE ENVIRONMENT (1996).

170. CHEMICAL MANUFACTURERS ASSOCIATION (CMA), RESPONSIBLE CARE: PROGRESS REPORT 1994-95 23-26 (1995).

171. For example, a company could be allowed its own "bubble license": offsetting gains in one area, inexpensively gained, against losses in another where it would be excessively expensive to achieve change.

172. This is allowed under some U. S. state permitting laws. *See* ENVIRONMENTAL LAW INSTITUTE, NEW STATE AND LOCAL APPROACHES TO ENVIRONMENTAL PROTECTION (1993) (Environmental Law Institute Report to EPA Office of Technology Assessment).

fied and specified source reductions. Fourth, given that regulatory flexibility could have adverse implications for environmental justice, any new proposal should demonstrate that it does not pose a significant increase or shift in the risk of adverse effects or result in a significant relocation of pollution.[173] Finally, the ISO 14000 series contemplates the development of methods of Environmental Performance Evaluation (EPE) which will enable organizations to develop appropriate indicators through which they can benchmark performance against both internal environmental objectives and the performance of other organizations.

b. Pollution Prevention or Pollution Control

One of the greatest attractions of management systems approaches is their promise to deliver continuous improvement and environmental performance "beyond compliance" with existing regulations. Yet performance indicators which may be used to measure achievement will measure outcomes crudely (e.g. levels of discharge to a particular medium). If so, then the familiar problems of encouraging and facilitating enterprises to simply adopt "end-of-pipe" solutions (e.g. scrubbers rather than cleaner technologies) and to transfer toxins from one media to another will be further entrenched.

The challenge is to move "from single-medium, single-stress, point-source, end of pipe technologies toward whole-facility and systemic strategies based on continuous improvement and efficient use of energy and materials, as well as pollution prevention."[174] Accordingly, relevant indicators must be geared to pollution prevention rather than pollution control, taking account of the raw materials and fuels manufacturers use, and the material and energy intensity of the processes, practices and procedures they adopt. But "[p]ollution prevention and efficiency approaches . . . are most difficult to verify in any conventional sense."[175] Indeed, this is one reason why regulators are much more comfortable focusing on easily verifiable but undesirable end-of-pipe technology-based approaches.[176]

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173. ASPEN INSTITUTE, *supra* note 169.

174. John Atcheson, *Can We Trust Verification?* ENVTL. F., July-Aug. 1996, at 15, 19.

175. *Id.*

176. For regulators at least, an advantage of old style specification standards is that they are comparatively easy to measure and verify. This is not the case with a more open ended, flexible and outcomes oriented approach, where "[a] major issue . . . is to establish feasible and agreed-upon ways to measure and verify facility and

There are very few real world examples of how a more flexible regulatory approach utilizing management systems can be made to work in practice or, more particularly, of what indicators may prove appropriate to measure pollution prevention. In the U.S., Project XL and the Common Sense Initiative are experimenting with "alternative ways of accomplishing environmental objectives that emphasize performance, allow flexibility, encourage prevention and efficiency at a facility level, while assuring accountability."[177] Facility planning laws, linking permit requirements to a pollution prevention plan and establishing milestones for performance, are also developing in similar directions.[178] Within the related field of occupational health and safety, OSHA's Voluntary Protection Program, in the 1980s, also provides some guidance as to how this task should be approached.[179] The *Measuring Up* report makes a substantial advance in identifying indicators that are designed specifically to prevent pollution and resource efficiency.[180]

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sector performance." Daniel J. Fiorino, *Towards a New System of Environmental Regulation: The Case for an Industry Sector Approach*, 26 ENVTL. L. 457, 478 (1996).

177. Atcheson, *supra* note 174 at 14, 21.

178. These are intended to focus resources on pollution reduction goals rather than on completing the burdensome process of achieving several different permits. *See* ENVIRONMENTAL LAW INSTITUTE, NEW STATE AND LOCAL APPROACHES TO ENVIRONMENTAL PROTECTION (1993) (Environmental Law Institute Report to EPA Office of Technology Assessment).

179. Under this program, a company may implement an OHS management system, and, in exchange, OSHA will reduce enforcement and inspection requirements. What is striking about this scheme is the extent of the requirements on a firm before it becomes eligible to participate. Under the self-inspection and hazard-correction requirement, an employer must describe its hazard assessment procedures in detail, show how hazard assessment findings are incorporated in planning decisions, training programs and operating procedures, and agree to provide to OSHA its self-investigation and accident investigation records, its safety committee minutes, its monitoring and sampling results, and its annual safety and health program evaluation. It also pledges to correct in a timely manner all hazards identified through self-inspections, employee reports or accident investigations, and to provide the results of these investigations to its employees. That is, it is not sufficient for enterprises simply to establish a management system. Rather, there is an insistence that a number of other clearly identified requirements must also be satisfied.

180. *See* DARYL DITZ & JANET RANGANATHAN, MEASURING UP: TOWARD A COMMON FRAMEWORK FOR TRACKING CORPORATE ENVIRONMENTAL PERFORMANCE (1997).

2. Third Party Oversight

a. Independent Audits

Having identified what to measure, the next crucial question is who should do the measuring? The adoption of a management system implies that the enterprise will undertake its own continuing monitoring of its performance. However, such independent and appropriate performance indicators as are developed must also be independently monitored. Without this review, no assurance exists that the information industry provides is genuine. Moreover, if the monitoring process is to gain community credibility and legitimacy, it must also be transparent. Both factors are increasingly recognized by the industry as the necessary price for greater autonomy.[181]

Chemical industry associations across a number of countries are now taking active steps to move beyond self-policing of their health, safety, and environmental management procedures. Of course, one option, for larger organizations at least, is to create quasi- independent audit teams within the organization. For example, some transnationals conduct detailed audits, with no prior warning on subsidiaries throughout the world. Auditors have no commercial vulnerability and are a far more likely to be intimately familiar with the firm's operations. Further, the managers may find it more difficult to ignore directions from corporate headquarters than from external auditors. However, this approach maintains the disadvantage of a lack of credibility. However "arms length" the audit team may be, its independence may be doubted by the community, whose views will be crucial in this respect.

A more preferable form of monitoring and oversight is an audit conducted by an independent professional.[182] Such audits can provide systematic, documented, periodic and objective reviews of whether environmental requirements are being met or

181. This view has been attributed to U.S. Chemical Manufacturers Association executive J. Davenport.

182. An innovative alternative, that has been trialed in Alberta, Canada, is a peer evaluation system whereby each participating company agrees to receive the services of a certified independent auditor from a participating company in the same industry group. Whether such a system would work at least as well as one utilizing auditors from outside the industry itself, whether it would result in collusion, or whether the converse (auditors from rival firms exploiting opportunities to disadvantage their rivals) would result is too soon to say. This is indeed one area where further empirical evidence is needed and where much may depend on the characteristics of the individual industry.

whether systems are being adhered to.[183] In particular, they involve "the structured process of collecting independent information on the efficiency, effectiveness and reliability of the total . . . management system."[184]

The Canadian Chemical Producers' Association "compliance verification system" requires that a team of four conduct a verification of a member company's operations.[185] Two of these verifiers have extensive industry experience; two are outsiders, one preferably from the company's local community advisory panel. This team inquires whether and to what extent the company is in compliance with the guiding principles and codes of Responsible Care. It looks for evidence of a management structure, a benchmarking process, an internal auditing process, and a mechanism for follow-up and continuous improvement.[186] The team provides a report to company management describing areas where more effective systems may be needed, as well as areas where the company has gone beyond the "state-of-the-art" of Responsible Care. It is expected that the company will report the results of the verification to its local communities.[187] Three years after its inception, with the first round of verification nearing completion,

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183. *See* Neil Gunningham & James Prest, *Environmental Audit as a Regulatory Strategy: Prospects and Reform,* 15 SYDNEY L. REV. 492 (1994).

184. HEALTH & SAFETY EXECUTIVE (UK), SUCCESSFUL HEALTH AND SAFETY MANAGEMENT, Health and Safety series booklet HS(G)65 (4th ed. 1993).

185. At the time of writing, the Canadian version is stronger than most others. For example, the US CMA is still experimenting with management systems verification to enable a critical assessment of a company's progress, and providing for public participation, while in Australia the current proposal is that a community representative (for example, a technical specialist with links to a local community) will only participate where the company being audited has agreed to their inclusion. *See* James Smith, Measuring Health, Safety and Environmental Performance: Why, What, and Whose? (Feb. 21, 1994) (summary of a paper presented at the ACIC Convention in Leura, NSW, Australia). Clearly, this is a substantial limitation to effective and independent third party oversight and will do little to overcome community skepticism.

186. Four verifiers, including two industry volunteers, a professional auditor, and an environmentalist, studied CCC and Imperial Oil's (Toronto) agricultural chemical groups for a week, which included three to four days of speaking with people of each company. Working from the CEO down, the team verified the management systems to ensure Responsible Care requirements were met. The team was able to examine twenty percent of the 151 items in depth, quickly checking the others. *See* Elisabeth Kirschner, *Responsible Care: New Jersey - State Ambassadors,* CHEMICAL WEEK, Dec. 8, 1993, at 40. *See also CMA Verification Process Kicks Off to Successful Start,* CARELINE, Jan. 1997, at 10.

187. However, this remains a contentious issue. Under the U.S. version, there is no such obligation or expectation as yet. *See* Letter from Brian Wastle, Vice President, Canadian Chemical Producers Association, to the author (Nov. 1993).

both companies and verifiers regard the verification process as a qualified success. In addition to its role in reviewing the performance of individual enterprises, the process has also served to identify some considerable achievements and limitations of Responsible Care as a whole.[188]

However, what remains strikingly absent even from "best practices" initiatives such as the Canadian approach is an independent third-party auditing system not merely of whether specified management systems are in place, *but also of a company's environmental performance as a whole and whether it is achieving continuous improvement.* Thus Responsible Care and ISO 14001 verification, even under recent reforms, share a common and fundamental limitation: the failure to independently measure and report upon environmental performance. Nothing short of this will, in the longer term, satisfy demands for full accountability and reassure governments and communities that firms that gain the benefits of regulatory flexibility are in return delivering environmental results better than those required by traditional regulation.[189] Thus, an optimal regulatory system will provide for third-party audits by independent experts, involving community and environmental groups, who audit not merely systems but also environmental outcomes in terms of performance indicators.

Of course, audits could be conducted by government inspectors (also with community participation) rather than by independent professionals. However, there are considerable attractions in using independent third parties rather than government. Determining whether an enterprise has genuinely and successfully adopted and implemented a systems-based approach not only requires greater and different skills on the part of government inspectors, but is also extremely demanding of the inspectors' time. Most inspectorates or compliance bureaus currently lack both the time and the technical skills necessary to conduct these tasks. Those skills could be acquired. But this will often involve hiring more, and more expensive, employees and devoting substantial amounts of additional time to such audits. In an era of fiscal constraint, these options may be impractical or unattractive.

If the audit function were contracted to independent third parties with the specialist skills required ("environmental auditors"),

188. *The Verdict on Verification from Canada*, CARELINE, Apr. 7, 1997, at 4.

189. *See generally* Gunningham & Prest, *supra* note 183; Neil Gunningham, *Environmental Auditing: Who Audits the Auditors?*, 10 ENVTL. & PLAN. L. J. 229 (1993).

these problems could largely be overcome. A condition of participation in regulatory innovation normally requires that the enterprise concerned, not government, bear the cost of the third-party audit. This approach substantially conserves regulatory resources, which can be redeployed so as to focus very largely on those who are still regulated by traditional means, and satisfies the "polluter pays" principle.[190]

However, the difficulty of relying upon third-party auditors as surrogate regulators lies in ensuring their professional integrity and independence. The possibility of co-option of the auditors by the firm seeking accreditation remains a hazard, illustrated by the failure of financial auditors in the financial scandals of the 1980s.[191] The lack of any universally agreed-upon standards for carrying out safety audits exacerbates the problem. Neither is there agreement with regard to the professional requirements for auditors, although such a development seems imminent. None of the possible ways of dealing with this issue are totally satisfactory. Options include nomination of the auditor by the regulator from a pool of accredited auditors, rather than by the regulated enterprise, state regulation of auditors, an auditor accreditation scheme, peer review, civil liability, and the establishment of a set of national standards relating to the quality and scope of audits.[192]

A further problem concerns the circumstances under which audit results should be disclosed and the issue of transparency, given the tension between the regulator's interests and those of the regulated enterprise. From the regulator's point of view, third-party audits work best if the auditor's report is made accessible to the regulatory agency and does not remain confidential. However, such a requirement is likely to be unattractive to the enterprise itself - which is footing the bill. The enterprise may understandably fear that it is providing the regulatory agency with considerable information (and ammunition, in the event of a prosecution) which would otherwise not be available. Thus, a tension exists between the regulator's need to be reassured that it will be alerted to unsatisfactory audit results, enabling it to take

190. Since the regulated enterprise might wish to conduct such periodic audits for its own purposes, the additional cost to itself may be acceptable.

191. However, there may be a contrary incentive in the case of at least some environmental auditors: identifying numerous deficiencies in the client's systems in anticipation of gaining the contract to fix them.

192. *See* Gunningham, *supra* note 189.

corrective action, and an enterprise's reticence to adopt a systems-based approach if required to make full disclosure of the audit report.

The community is also unlikely to trust the outcome of a third-party audit unless the results are transparent. But if the regulator insists on full disclosure in every case, an audit approach may become insufficiently attractive for many enterprises to agree to participate.[193] Such an outcome would be counterproductive; a solution must be found which is acceptable to both sides. The most satisfactory compromise might be one in which only an overview or a summary of the audit is ordinarily supplied to the regulator and the community by the auditor, indicating the conclusions, but not the details, of the audit. Thus, the details, including any specifically identified breaches of the legislation, would remain confidential to the regulated enterprise. The fact that an audit itself is to be treated as a privileged document should be clearly indicated, either in enforcement guidelines or in the enacting legislation itself.[194] However, an audit summary that indicates a generally unfavorable report or major failings in individual aspects should trigger an inspection.

While this solution may serve to alleviate the fears of regulated enterprises, it does far less to assure the regulator that the audit system is working satisfactorily, that the auditors are operating in the public interest, and that they have not been captured by the client enterprise. To overcome these problems, and to ensure the integrity of the audit process, the regulator should have a right to spot check and verify a random sample of full audits. Even in this latter circumstance, the information gained from the audit report could not sensibly be used as a basis for enforcement action. If it were, it would provide a substantial and unnecessary disincentive to adopting an EMS approach. Few companies would agree to participate in the scheme.[195] More appropriately, the agency might give participating firms qualified privilege[196]

193. While self-insurers and those who require a SMS to tender for government contracts might remain within track two, most others might find the remaining incentives insufficient to do so.

194. The one circumstance in which privilege should not be granted is where the duty holder seeks to invoke the audit in defense to a prosecution, in which case the prosecution should have a right to produce other evidence from the audit which counters this.

195. There is, after all, little incentive to conduct an audit if the information it generates serves to provide a basis for prosecution or other enforcement action.

196. *See* Gunningham & Prest, *supra* note 189, 509-12.

and a "period of grace" to rectify problems revealed by the audit.[197]

b. Community Right-to-Know ("CRTK")

Another third-party oversight mechanism involves engaging and empowering the community to act as a restraint on the behavior of business. In the case of the chemical industry, the community is a potentially powerful restraining force because chemical plant emissions are widely recognized as having direct effects on human health. Trade unions, local community groups, national environmental groups, and other NGOs can all have a major impact on large corporations, which must increasingly protect their environmental credentials and credibility.

However, an essential prerequisite for effective community involvement is access to information about the chemical industry's emissions and activities. Communities with information can more effectively act as a countervailing force, compensating in part for the inadequacy of regulatory resources, by scrutinizing both industry and agency performance and bringing pressure to bear through "shaming industry" tactics where performance is inadequate. Without information, they have great difficulty fulfilling this role. Moreover, information can serve "to lesson irrational fears and ideologically driven mistrust among various groups. Improved information about specific issues may increase the chances of a negotiated solution to a problem."[198]

The U.S. chemical industry acknowledged the importance of transparency and information disclosure by its initial adoption of the slogan "don't trust us, track us."[199] This adoption encapsulated the basic tenet of Responsible Care - namely that the scheme will only gain credibility if the public is enabled through access to information to judge the industry by its actions rather

197. It might be necessary to provide statutory guarantees that information gathered in such an audit cannot be used in any subsequent prosecution action. Such a strategy would work most effectively if the relevant inspectorate adopted a diagnostic role - at least in respect of voluntary audits. That is, it would see its primary means of obtaining compliance as the provision of technical assistance to companies in breach of regulatory standards, keeping advice and policing as quite separate functions.

198. PAUL L. KLEINDORFER & ERIC W. ORTS, INFORMATIONAL REGULATION OF ENVIRONMENTAL RISKS (Wharton Risk Management and Decision Processes Center Working Paper Number 96-04-26, 1997).

199. That slogan turned out to be a public relations disaster - surveys indicated that most Americans remembered only the first part of it - and the Australian ACIC has wisely chosen not to adopt it.

than by its rhetoric. For its part, the industry would prefer that disclosure was voluntary rather than legally mandated.[200] However, evidence suggests that voluntary approaches are of doubtful effectiveness,[201] and in many respects a very poor substitute for mandatory disclosure, which conventionally takes the form of CRTK legislation.

The potential benefits of CRTK legislation are well known. Right-to-know gives community groups insights into the severity of the chemical hazards they face. Such information encourages greater public participation. In turn, information about the hazards gives workers and community groups increased potential leverage, enabling them to more effectively pressure polluters to reduce emissions.[202] It can also provide company managers with leverage over internal procedures. With respect specifically to Responsible Care, CRTK, in principle, provides community groups with a capacity to identify the extent to which individual companies are honoring their responsibilities under the other Codes of Practice.

Unfortunately, Responsible Care requires insufficient information disclosure, and ISO 14001 is far worse. American fears about the legal implications of disclosure, feelings of discomfort about forms of dialogue which in Europe are becoming increasingly common, and the more antagonistic culture between industry and other stakeholder groups in the U.S. has resulted - because of American success in the negotiating process - in much ISO 14001 produced information being treated as confidential, and in almost no effort to encourage dialogue under the standard.[203] As Nash and Ehrenfeld state:

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200. At present, some versions of Responsible Care adopt the former approach. For example, in Australia, a Code of Practice endorses the principle of the community having a right to knowledge concerning hazardous substances stored within members' premises; the processes used at members' premises in manufacture of those products; and the transport arrangements for moving those hazardous substances to and from members' premises and resultant from these activities. The primary mechanism for communicating the relevant information is through local community liaison panels established with the co-operation of local government, state regulatory agencies, and prominent local residents. *See* Neil Gunningham & Amanda Cornwall, *Legislating the Right to Know*, 11 ENVTL. & PLAN. L. J. 274, 275 (1994).

201. *See* Neil Gunningham, *Environment, Self-Regulation, and the Chemical Industry: Assessing Responsible Care*, 17 L. & POL'Y 57, 77-80 (1995).

202. *See* Neil Gunningham & Amanda Cornwall, *Legislating the Right to Know*, 11 ENVTL. & PLAN. L. J. 274, 278 (1994).

203. In contrast the Coalition for Environmentally Responsible Economies' (CERES) principles include a requirement for public disclosure of environmental per-

> ISO . . . registration requires very little action that would strengthen a firm's relationships with those outside its fence lines. ISO 14001 companies need only concern themselves with impacts within their immediate 'control'. They may be passive in their relationships with concerned citizens, simply responding to inquiries instead of actively seeking input from outside.[204]

Unfortunately, American industry's resistance to disclosure under ISO 14001 is in no way balanced by a willingness to engage in voluntary disclosure. On the contrary, there is very little evidence that the majority of U.S. companies will voluntarily disclose information to the public, or even to shareholders concerning their environmental performance.[205] Only, a handful of firms have opted for greater transparency, usually through the vehicle of an annual environmental report. In general, however, the public has considerable difficulty obtaining information under voluntary approaches. As one community representative argued: "if it was a law we could compel disclosure. But because it's only a voluntary code, we have constant problems getting the information we want."

Government intervention should be used to directly empower communities by requiring statutory disclosure of information concerning emissions. The TRI in the U.S. is a strikingly successful model of how such legislation might be designed. By using the TRI, environmental and public interest groups can make some independent assessment of progress under Responsible Care and learn about the industry's activities and their environmental impact. Companies seeking regulatory flexibility, in return for implementing ISO 14001, should equally be required by law to commit to a similar degree of information disclosure as a condition for such flexibility.

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formance. CERES also requires companies to make information generated through self-audits publicly available - again a sharp contrast to the position under ISO 14001. CERES principles further include commitments from enterprises to report publicly violations of the law, waste management, workplace hazards and to report annually their environmental releases. None of these disclosures on corporate environmental performance is required under ISO 14001. Similarly, EMAS also provides for public disclosure as does BS 7750 whereby a company must publicly disclose direct as well as indirect significant environmental effects of the manufacturing process.

204. Jennifer Nash & Joshua Ehrenfeld, *Code Green*, ENV'T, Jan./Feb. 1996, at 16, 42.

205. *See supra* note 203.

3. Broader Stakeholder Involvement: Community Participation and Dialogue

The chemical industry cannot regain public trust, and regulatory flexibility will not be a credible option, unless all stakeholders are directly involved in the process. Methods must be found whereby all the relevant communities,[206] including workers/trade unions, local community groups, and national environmental groups, can participate in, oversee, and scrutinize regulatory flexibility. In addition to the role of information and CRTK, an ongoing dialogue between industry and community could provide feedback on the response of the facility in regard to community concerns, community out activities, and other means of institutionalizing public participation and means of assessing their success.

In the case of Responsible Care, community input and oversight is currently channeled through national and local advisory councils. For example, in Australia, the National Community Advisory Panel, made up of a variety of community activists and independent technical specialists, has made a major contribution in ensuring that draft proposals are consistent with the public interest goals espoused by Responsible Care. The Panel's most significant role has been the often substantial modifications it has made to draft Codes of Practice. More broadly, such panels may provide a "multilateral forum within which problem definition and policy formation could benefit from a direct engagement with alternative perspectives."[207] Although the Panel's views are not binding on the administrators of Responsible Care, the chemical industry has yet to reject them - for to do so would seriously prejudice the credibility of the entire scheme.

Similarly at the local level, there are now a range of local or site liaison committees or committees that might "provide the basis for a complementary forum that would foster simultaneously an improved learning capacity at the level of the individual organization, greater accountability to local publics, and a consequently enhanced legitimacy for the industry's activities."[208]

206. The public is not a homogeneous group - the communities located in close proximity to chemical plants themselves often have very different views from those located at some distance from them.

207. Peter Simmons & Brian Wynne, *Responsible Care: Trust, Credibility and Environmental Management, in* ENVIRONMENTAL STRATEGIES FOR INDUSTRY 221 (Kurt Fischer & Johan Schot eds., 1993).

208. *Id.*

These groups, whose contribution varies greatly with local circumstances, can, when functioning well, also serve to scrutinize the performance of companies at the local level.

How effective national or local groups are, and how much credibility they have, depends substantially on the resources available to them, how their members are chosen and how genuinely representative they are. While industry has made recent efforts to attract some of its sternest critics onto the panels, the major environmental groups (in contrast to many local groups) have refused to participate.[209] As a result, individuals on the panel commonly do not represent any broader constituency.

Because ISO 14001 involves individual self-regulation in the absence of any relevant trade association, these mechanisms are not available to underpin community oversight of companies adopting it. Thus, ISO 14001 is seriously deficient in terms of community dialogue and disclosure. However, there is no principled reason why regulators should not insist on dialogue with the local community and disclosure of information as part of the quid pro quo for waiving regulatory requirements for ISO 14001-certified companies. Regulators in the U.S. are currently contemplating versions of "ISO Plus" that would do precisely this.[210] Central components of such a strategy are perceived to be encouraging community participation, institutionalizing public participation, recognizing public knowledge, and utilizing cross-cultural formats and exchanges.[211]

The Australian State of Victoria is already achieving much the same result through the use of Environmental Improvement Plans (EIPs), which form part of the Accredited License Scheme. In return for regulatory flexibility, an accredited company agrees to implement an EMS, to conduct an environmental audit, and to implement an EIP. The latter must include a written plan with a set of performance measures, monitoring requirements, and improvement proposals which take into account the economics of

209. These groups reportedly fear that their participation might be perceived as an endorsement of Responsible Care or that by participating they might be co-opted and less free to criticize the industry in the future.

210. The Environmental Leadership Program of the USEPA, while still evolving, apparently contemplates an environmental management system as its central component, with community outreach and employee involvement as critical elements of that system: a substantial step beyond ISO 14001 in its current form.

211. *See* PUBLIC PARTICIPATION AND ACCOUNTABILITY SUBCOMMITTEE, NATIONAL ENVIRONMENTAL JUSTICE ADVISORY COUNCIL, THE MODEL PLAN FOR PUBLIC PARTICIPATION (Nov. 1996).

the company as well as environmental concerns. It must also directly involve their local communities in the development and monitoring of the plan. In so doing, it arguably satisfies the multiple objectives of community right-to-know: clearly established milestones, corporate commitment to management systems, improved measurement and an increase in trust between all parties.[212] In the spirit of "don't trust us, track us," a central component of such a strategy should be the provision by the enterprise to the community and the regulator of an annual noncompliance report disclosing all major breaches during that period. Since workers (also members of local communities) will commonly be aware of such breaches, the enterprise risks exposure if it under-reports.

However, one remaining fundamental problem with community outreach programs is whether community outreach programs will ever serve to break down the layers of distrust between industrial facilities and those who live near them. The essential problem is one of fundamental miscommunication between the two groups. Specifically, the industry remains locked firmly into a paradigm of scientific knowledge as a basis for judgments and decision making (the Missionary stage) and fails to take account of the "culturally embedded basis of public distrust, rooted in a pervasive consciousness of risk that has become characteristic of contemporary industrial cultures."[213] Indeed, "as long as the Responsible Care program is founded on the premise that furnishing the public with evidence of its improvemen[ts] will rebuild trust in the chemical industry, it is unlikely to achieve the recuperation of public confidence that the CIA is hoping for."[214]

4. Regulating at a Distance: Government as Backstop

As indicated, there are serious risks that regulatory flexibility schemes implying greater autonomy for enterprises may be abused. For those granted such autonomy, the temptation to pursue short-term economic self-interest, to cut corners and minimize costs at the expense of environmental considerations is

212. David Robinson, *Public Participation in Environmental Decision-Making*, 10 ENVTL. & PLAN. L. J. 320 (1993).

213. Simmons & Wynne, *supra* note 207. (Kurt Fischer & Johan Schot eds., 1993).

214. John Ehrenfeld, ISO 14000 and Responsible Care: What Kind of Change Agents Are They? 10 (Sept. 1995) (paper presented at ISO 14000: Preparing for Change Conference in Houston, Texas).

simply too great - particularly where commercial incentives to be "green" are very limited. If these defectors are not dealt with appropriately, the entire scheme may be undermined.

Responsible Care, has serious free-rider/mutual assurance problems (here referred to as collective action problems), and the credibility of the program may be threatened unless participating firms are assured that their competitors will implement similar obligations. Third-party verification of independent performance indicators could enable companies to compare each others' performance. But such moral suasion, while important, has proved insufficient to overcome collective action problems. Likewise, community pressure (which relies heavily upon the commitment and cohesiveness and indeed existence of local communities) has had a very uneven impact and cannot be relied on in isolation.

The conventional solution to the collective action problem involves coercing those who are unwilling to comply voluntarily.[215] That is, the voluntary compliance of the majority of firms may ultimately depend upon "the coercive imposition of the code of conduct on the minority of free-riders."[216] State intervention is not the only conceivable way to ensure such coercion. The relevant industry association in each jurisdiction - as has occurred in the case of the United States nuclear power industry[217] - may assume a regulatory role - in effect, police the activities of its members in complying with Responsible Care. However, the chemical industry associations have chosen not to follow this path, a decision that is unlikely to be reversed given the hostility of most of their members to such a proposal.

In this absence, government intervention will be necessary to ensure that the industry association performs its self-regulatory tasks honestly and effectively; to provide extra leverage where the industry association's efforts and powers are insufficient to change the behavior of recalcitrants; to regulate the behavior of those who refuse to participate in the self-regulatory scheme; and to intervene directly where the gap between industry self-interest

215. Garrett Hardin, *The Tragedy of the Commons* 162 SCIENCE 1243, 1247 (1968).

216. Ian Maitland, *The Limits of Business Self-Regulation* 27(3) CAL. MANAGEMENT REV. 132, 136 (1985).

217. JOSEPH V. REES, HOSTAGES OF EACH OTHER: THE TRANSFORMATION OF NUCLEAR SAFETY SINCE THREE MILE ISLAND 97 (1994).

and the public interest is too large for self-regulation alone to be a credible strategy.

That is, co-regulation, rather than self-regulation, may be the most viable way of preserving the considerable strengths of Responsible Care while at the same time, overcoming its collective action problems and restoring public trust. Co-regulation means the existence of a degree of government regulation in combination with the self-initiated safeguards introduced by the industry itself under Responsible Care. Minimum (outcome-based) standards would continue to be set by the government applying either general or individually negotiated permits. Government would reserve the right to impose legal sanctions for breach where enterprises fail to live up to their promises. However, the day-to-day administration of these standards would be the responsibility of industry, subject to third-party audit and community scrutiny.

Under this approach, government leaves to the industry and its association many of the details of how to improve its environmental performance (e.g. the Responsible Care Codes of Practice), but retains the full enforcement powers. The government would intervene when necessary to deter free-riding or other abuses. Those wishing to improve their environmental performance beyond the legal norm are encouraged and facilitated to do so with a minimum of government intervention. Additional incentives might include waiving potential inspections and required paperwork. Backsliders will continue to face the wrath of the state.

Co-regulation also implies that government must be willing to intervene directly in the affairs of those companies that have not agreed to participate in or defect from the self-regulatory scheme.[218] So that non-participating companies do not gain a short-term competitive advantage by refusing to join the self-regulatory program government must ensure that non-participants face standards at least as tough as those adopted by participating companies.

The appropriate approach to the regulatory flexibility bestowed upon those who agree to adopt EMSs such as ISO 14001 would in many respects be similar. With ISO 14001 there is no relevant industry association, no credible form of collective self-

218. In the case of Responsible Care this includes substantial numbers of smaller operators.

regulation, and no collective action problems of the type described above. ISO 14001 deals with individual enterprises that in effect agree to self-regulate in accordance with a management system approach in return for regulatory flexibility. As with Responsible Care, there will be risks of abuse such as the adoption of cosmetic "paper systems" to gain regulatory concessions, to improve public relations, or to win other perceived advantages.

The central policy questions are how can enterprises be prevented or deterred from abusing regulatory flexibility schemes in this way, and how will regulators or courts be able to distinguish between paper systems and the genuine article? The problems are readily apparent. Many prosecutors in the U.S. have doubted not only the credibility and viability of compliance plans, but also their own capacity to discriminate between genuine and spurious plans,[219] at least in the context of a sentence hearing. Also, in the U.S., agreement to introduce corporate compliance plans (including a commitment to a systems-based approach) can lead to a sentence reduction for environmental crime. But these plans are easily manipulated, giving rise to a self-serving legal industry which can produce with regular monotony superficial but apparently bone fide compliance plans.[220] Without clear minimum criteria, one doubts that adoption of such plans would have much beneficial impact on corporate behavior.

At this stage, no one knows how seriously or how extensively firms may abuse the regulatory flexibility privileges inherent in either "Responsible Care Plus" or "ISO Plus." But given the obvious temptations and experience in related areas, agency strategies to counter this problem will be essential to the successful operation of either approach. This is particularly the case given the limitations of third-party oversight. For example, auditors may be less than vigilant or vulnerable to capture by the very industries they audit, communities may be apathetic or lacking in any genuine sense, or trading partners may settle for formal certification of a management system without insisting on genuine improvements in environmental performance. The additional layers of oversight, scrutiny, and informal social control discussed in this article, will be important and are capable of taking much of the weight off government, but their impact is likely to be uneven

219. John C. Coffee, *No Soul to Damn: No Body to Kick: An Unscandalized Inquiry into the Problem of Corporate Punishment*, 79 MICH. L. REV. 386 (1981).
220. *Id.*

and less than fully effective. As such, it would be a serious mistake to rely upon them in isolation. Indeed, an underpinning of government control will be absolutely essential to overcome the temptation to cheat.

When should the regulator intervene to ensure that regulatory flexibility under Responsible Care is working effectively, that management systems are being complied with, or that an enterprise - through intent, inefficiency or incapacity - is not failing to discharge its obligations as measured by agreed performance indicators? And how can such intervention be designed so as to avoid unnecessary intrusion into the details of an enterprise's conduct, while at the same time both minimizing the burden on regulatory resources and ensuring that agency intervention is within its budgetary and administrative capability?

To achieve these goals, regulatory design should involve a tiered regulatory response. First, it should encourage enterprises to regulate themselves. For example, one of the prerequisites should be that the EMS is self-referential and self-correcting. Second, third-party oversight, both at the stage of accrediting the system when it is introduced and through subsequent periodic audits is a necessity. The third party audit fulfills a substantial role as surrogate regulator. Communities, empowered with information can direct channels of communication to regulated enterprises and (at least under Responsible Care) play a role in the decision-making process itself. Likewise, they can act as a countervailing force, along with pressure from trading partners and peer groups, to provide informal social control. Third, an underpinning of government regulation is needed. This would "kick in" *as a backup mechanism* when there is reason to believe that tiers one and two have not delivered required system-effectiveness and improvements in environmental performance. As a result, enterprises participating in Responsible Care or using an EMS would be spared onerous, time consuming routine inspections.

What circumstances might be appropriate to trigger an inspection? The following five are suggested, though others may evolve once a scheme is in operation:

1) If a community representative, having exhausted internal procedures, complains that the audit was not, in his-or-her view, fair and accurate;
2) If the third party audit report itself expresses serious reservations about the effectiveness of the EMS;

3) If a regulator's verification of the third-party audit (conducted randomly on a small minority of audits) suggests that the audit was not fair and accurate;
4) If there is a serious accident or incident, or a series of complaints from workers or local communities (although safeguards against vexatious complaints are needed); and
5) If the relevant industry association requests such intervention.

The attraction of this proposed approach is that government retains a role in ensuring that prescribed environmental outcomes are achieved, but does not resort to inflexible, costly, prescriptive, and legalistic mechanisms to do so. Rather, those parts of industry that demonstrate that they can be trusted to self-regulate are left to decide for themselves precisely how they should improve their environmental performance by devising their own internal regulatory mechanisms best suited to achieve those ends. The virtue is in the encouragement of more cost-effective and innovative industry responses than under technology-based "command and control" regulation.

Thus, government would only regulate "at a distance," exercising an oversight role rather than directly policing industry performance. This would involve periodic review of the results of companies' self-monitoring,[221] and summaries of the proposed third-party audits. The latter would be a crucial independent indicator of whether outcomes are indeed being achieved by individual operators. Government would also take account of complaints against Responsible Care members or individual companies who adopt EMS and of community consultative mechanisms in determining whether self-regulation was working satisfactorily.[222]

Inspections of companies subscribing to Responsible Care or committing to an EMS would become a low administrative priority or would be discontinued, leaving government free to re-deploy its scarce regulatory resources and focus on these companies (often the worst polluters) that have refused to participate in co-regulation under one of these approaches. Government would continue to regulate these companies directly through regular inspections, reinforced by administrative measures and criminal prosecution.

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221. This would include how far the company meets the performance indicators currently being developed under Responsible Care.

222. In the USA these include Community Advisory Panels, and in Australia, community and industry consultative committees.

5. Incentives for Enterprise Participation in Regulatory Flexibility

Finally, even if government insists on all the requirements identified in previous sections as the quid pro quo for granting regulatory flexibility under ISO 14001 or Responsible Care Plus, little will be achieved unless enterprises are convinced that the benefits of committing themselves to such an approach are likely to outweigh the costs. Indeed, a number of regulatory redesign initiatives have faltered or failed because there were too few takers.[223] This raises the question of whether is it necessary or desirable for governments to provide positive incentives to enterprises to participate in regulatory flexibility programs, and, if so, what should those incentives be?

In the case of Responsible Care, there are compelling reasons for industry self-interest - - the need to rebuild community trust and maintain legitimacy, and thereby secure the long term future of the industry - to devote considerable resources to establishing and making the program effective. Moreover, for some companies, Responsible Care has also brought some tangible rewards in terms of reduced waste management, clean up and disposal costs, as well as reduced liability risk, improved insurance premiums, and enhanced community relations. While government can do a great deal to integrate Responsible Care into a broader co-regulatory scheme and to compensate for its weaknesses, government played no significant role in developing the program or in encouraging companies to join it. Nor, given the circumstances of its evolution, did it need to. However, if regulatory flexibility should be offered to Responsible Care firms not just because they have committed themselves to that program but also because they have met additional requirements prescribed by government such as performance outcomes, independent verification, and disclosure ("Responsible Care Plus") then even these firms may need incentives to participate.

ISO 14001 and EMSs approaches present a different challenge. The decision whether to adopt an EMS is one for an individual enterprise without any role or intervention by an industry associ-

223. For example, the Victorian Accredited Licensing Scheme (which includes a 25% license fee reduction, the offer of a bubble license, and less onerous conventional inspection) had, after 18 months in operation, attracted only a handful of participants, and many of the Reinventing Environmental Regulation initiatives in the USA are experiencing similar problems. Interview with B. Robinson, Chairman EPA Victoria [Melbourne, Victoria] (December 1996).

ation. Unlike Responsible Care, there is no sense in which the industry perceives ISO 14001 as a solution to collective action problems or as a means of addressing the issue of "communities of shared fate." It is not, in any sense, a proposed solution to the problem that the industry's reputation and possible future viability "is only as strong as its weakest link." Accordingly, whether to adopt such a system is likely to be an individual, commercially-based decision, driven substantially by trade considerations. ISO certification's cost - US$10,000 to $30,000 a year - and considerable time and resources commitment will also affect the enterprise's decision. That is, enterprises are only likely to adopt a management systems approach if they perceive it is in their individual self-interest to do so but not otherwise: peer group and industry association pressure are conspicuously lacking in the case of ISO 14001.

Are incentives for participating in regulatory flexibility programs necessary? According to one school of thought, the answer is no. On this view, enterprises act rationally by not only complying with existing law but also by moving "beyond compliance" with existing legislation.[224] The business community can combine environmental protection and economic growth objectives, and in so doing, not only ease regulatory pressures but also increase profits and develop the environmental technology necessary to compete effectively in the global environmental market. In sum, going "beyond compliance" is both good for business and good for the environment, forming a happy coincidence between private profit and public interest. Companies going down this path will increase profits, enhance their corporate image, position themselves to realize new environment-related market opportunities, generally improve efficiency and quality, foster a greater consumer acceptance of their company and products, and reduce potential legal liability. The potential use of ISO 14001 certification as a prerequisite for some forms of international trade should also incline enterprises to adopt the standard voluntarily.

Moreover, if a firm can gain a competitive advantage by embracing regulatory flexibility - if devising an alternative compliance strategy enables it to compete more effectively and capture

224. *See generally* Neil A. Gunningham, *Beyond Compliance: Management of Environmental Risk in* ENVIRONMENTAL OUTLOOK: LAW AND POLICY (Ben Boer et al. eds., 1994).

greater market share - then it must do so to prevent competitors from gaining an advantage by embracing it first.

If this argument is correct, enterprises have a natural self-interest in embracing regulatory flexibility and in adopting EMSs because of their promise to deliver continuous improvement and "best practice" environmental management and performance.[225] In particular, a systems-based approach can shift enterprises from a reactive strategy of grudging compliance with government regulation to a proactive response involving going "beyond compliance" and internalizing environmental considerations as an element of quality management.[226] If so, firms should not object to the performance indicators, verification, or other requirements government might impose as a quid pro quo for regulatory flexibility (though it should be noted the latter impose requirements well beyond what is required under ISO 14001 certification and require companies to do much more than will be necessary to use ISO in international trade).

There are conditions under which the economic benefits of investing in environmental protection are tenuous or non-existent, and where the costs to business of implementing environmental protection measures (and EMSs) will not be offset by any resulting savings from improved economic performance. The emphasis of corporations, and individual managers[227] on short-term profitability is a serious problem. Because corporations are judged by markets, investors, and others principally on short-term performance, they have difficulty justifying investment in environmentally benign technologies or management systems, that usually pay off only in the long term, and sometimes in ways not readily demonstrated in a corporate profit and loss account.[228] Moreover, seeking Responsible Care or ISO "Plus"

225. *See also* AUSTRALIAN MANUFACTURING COUNCIL, THE ENVIRONMENTAL CHALLENGE: BEST PRACTICE ENVIRONMENTAL MANAGEMENT (1992).

226. See Pieter Winsemius & U. Guntram, *The Environmental Challenge,* BUS. HORIZONS 12 (1992).

227. Individual managers too will be judged essentially on short-term performance, and if they cannot demonstrate tangible economic success in the here and now, there may be no long term to look forward to.

228. This indeed, is a major reason why full cost accounting is likely to be crucial to corporations going beyond compliance. Of course, some commitment to environmental priorities will have short-term pay-offs. Improvements in waste reduction, in good house-keeping, in saving energy, in eliminating excessive packaging, even in alternative materials purchase, will feed back directly into corporate profits - but even here, while the first 25 % improvement may be quite easily achieved, the next 25 % may prove far more challenging. *See supra* note 61.

recognition will consume considerable company resources, not least being the time of executives involved in negotiating the additional obligations implied in achieving the "plus."

If this analysis is correct, then what role is there for incentives to participate in regulatory flexibility? Enterprises sometimes have a direct incentive to go "beyond compliance" and sometimes they do not. Even when the incentive exists, experience suggests that enterprises cannot be trusted to do what is in both their economic and society's environmental interests.[229] For example, there are a variety of reasons, including bounded rationality, lack of information and appropriate accounting methods, rate of technological change, and pursuit of short-term profit, why they may not do so.

If government takes no steps to encourage regulatory flexibility, experience suggests that only a very limited group of enterprises will opt for this approach.[230] Some may prefer regulatory flexibility because they are already committed to going beyond compliance and such flexibility will better facilitate their doing so, because of the autonomy that this option promises, or because of improved public profile benefits. Given the start-up costs involved, firms concerned with the short-term will be disinclined to grasp available opportunities. Even firms that might gain a competitive advantage from improved environmental performance will not realize this. If regulatory flexibility programs are to not only reward the minority who will do the right thing anyway, but also to induce a much larger, pragmatically minded group to sign on, they must incorporate a significant range of incentives.

This suggests an important role for government in providing enterprises with financial incentives - which at the margin may be crucial - and other ways of encouraging a reordering of corporate priorities. Where it is not necessarily apparent to enterprises whether they are in a win-win situation, government should shift the goalposts to achieve this result - by removing the obstacles to improved profitability (greater regulatory flexibility), by providing positive incentives to embrace such flexibility,[231] and by en-

229. *See generally* JOSEPH J. ROMM, LEAN AND CLEAN MANAGEMENT: HOW TO BOOST PROFITS AND PRODUCTIVITY BY REDUCING POLLUTION (1994) (providing evidence that there are huge untapped efficiencies to be gained from improved environmental performance).

230. *See supra* note 227.

231. Another option would be to make adoption of ISO 14001 mandatory. Such an approach would be highly inappropriate. ISO 14001 have many shortcomings

abling firms to recognize the gains they may make (through information strategies and facilitating full cost accounting). This last role need not be played by government alone. Indeed, in some circumstances, it is more convincingly played by the private sector.

In particular, government can play a role in designing positive incentives to encourage those at the margin to embrace regulatory flexibility, with its accompanying commitments to systems-based regulation likely to build in continual improvement and cultural change. Without these incentives, many firms may find insufficient reason to "get over the hump": the initial investment and commitment to a systems-based approach which may be very considerable. There is a considerable range of options for encouraging enterprises to adopt regulatory flexibility, with the obligations that entails, including:

1) Administrative benefits, such as easing off on regular inspections[232] for enterprises that agree to participate in regulatory flexibility, or blitzing recalcitrants who choose not to;
2) Logo or other publicity or public relations benefits;
3) Reduced fees under the licensing system and fast-tracking of permit/license applications;
4) Safe haven for participating enterprises who self-identify breaches of regulation (other than serious breaches involving imminent danger), notify the regulator, and make timely correction of deficiencies;
5) Single multi-media permit for participating facilities, which provide considerable flexibility and efficiencies, minimize paperwork, or, in the case of specialty manufacturers in particular, allow less onerous permit requirements each time they begin a new batch chemical process;

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described earlier. It was, moreover, designed as a voluntary system, rather than as a regulatory one. Certainly it might usefully become a component of a broader regulatory approach but to make its use mandatory (for example for certain sectors or for firms above a certain size) in isolation could achieve little, and would be counterproductive in imposing a straightjacket on those who might prefer to achieve environmental objectives though other means (e.g. Responsible Care). Making ISO 14001 compulsory, even in conjunction with a range of other requirements, would also be over ambitious, given the demands on regulatory resources. Nevertheless, there may be circumstances in respect of particular hazardous industries where a mandatory systems based approach (which could include but should not be limited to ISO 14001) in conjunction with performance measures and other requirements may be justified. The safety case regime for off-shore oil is such a case.

232. For example, participating enterprises might be designated as a low priority for inspections.

6) Making participation a condition for tendering for major government contracts;
7) Subsidies to "kick start" a systems-based approach in firms that, by reason of their size, economic circumstances or other factors, would otherwise be unlikely to adopt regulatory flexibility;[233] and
8) Reductions in penalties if prosecutions take place, or an option to report and correct deficiencies in lieu of prosecution.

Other types of incentives, having the broader effect of expanding the category of "win-win" situations, exist which make it more profitable for business to behave in environmentally beneficial ways. These incentives, compatible with the type of regulatory flexibility regime proposed, include a range of positive price-based instruments, or supply-side incentives, which push back the point at which environmental improvements are no longer financially viable. Supply-side incentives refer to direct or indirect payments, including tax concession and subsidies, conditioned upon desired conduct. Examples, include tax concessions for the purchase of environmental preferable technology, tax deductions for the expenses of environmentally responsible activity, and lower taxes for preferred products or materials. The OECD Technology Environment Programme found that "natural technological evolution occurring in industry has not forced environmentally protective technologies to be designed or employed. Governments will need to promote cleaner production and products."[234]

Alternatively, government may invoke negative incentives, such as taxes and charges, which also attach a price signal to environmentally preferable behavior and/or technologies. Although it is debatable as to whether imposing the potential for new costs actually creates a win-win situation, in terms of the firm's bottom line, price signals should be as equally effective whether they are positive or negative. These may also induce the development of innovative solutions as firms strive to reduce costs. In a similar fashion, the removal of perverse economic incentives can also encourage cost driven environmental improvements by making it

233. *See* DAMES AND MOORE, CLEANER PRODUCTION MANUAL: ENVIRONMENT & BUSINESS (Environment Australia). Note that federal government has been providing financial assistance to SMEs to implement EMS, focussing particularly on cleaner production and waste minimization.

234. ORGANIZATION FOR ECONOMIC COOPERATION AND DEVELOPMENT, TECHNOLOGIES FOR CLEANER PRODUCTION AND PRODUCTS: TOWARDS TECHNOLOGICAL TRANSFORMATION FOR SUSTAINABLE DEVELOPMENT (1995).

less financially attractive to previously sanctioned harmful behavior. The extent to which price-based economic instruments foster "beyond compliance" outcomes will depend on the size of the price signal employed in relation to the prevailing minimum regulatory performance standards.

One way of enhancing the prospects of firms participating in regulatory flexibility arrangements would be to make any positive financial incentives exclusive to "track two". Similarly, track two firms could be given exemptions, for example in the form of a tax rebate, from negative price signals.

Market mechanisms, such as tradable emission permits, may also provide companies with an incentive to implement innovative and lateral solutions to pollution reduction. However, it may be difficult or impossible to successfully integrate such instruments where there is an existing sector-specific regulatory regime in place, as is the case with the chemicals sector with its Responsible Care program and myriad of command and control regulations.[235]

Despite the potential difficulties of using tradable permits in combination with existing policy instruments, there are still some useful features related to market-based instruments that can assist the cause of regulatory flexibility. In particular, bubble licenses and the ability to net or bank credits within firms could be further incentives offered to track two companies. Pollution levels created by industrial processes will fluctuate in accordance with changing market circumstances and, for larger firms, across different industrial sites. Providing firms with the ability to accommodate such fluctuations through bubble licenses and/or banking credits overcomes some of the rigidities associated with conventional command and control regulation. They can further be used to balance variations across different polluting media.

235. This is because tradable permit regimes work best when there are large differences in the marginal cost of abatement within and between industrial sectors. That way there is a stronger incentive for firms to actually engage in trading, thus lowering the overall cost of pollution abatement. The necessary consequence of trading is, however, that some firms, where the marginal cost of abatement is highest, will end up increasing their emissions, relative to the industry average. Such an outcome may well be incompatible with their obligations under Responsible Care or indeed any minimum performance standards that may exist. Finally, it would be difficult and indeed economically undesirable to distinguish between firms participating in a permits scheme.

a. Disincentives to Participate in Regulatory Flexibility

A serious, yet largely unrecognized hazard in designing regulatory innovation intended to remove unnecessary, time consuming, and costly "green tape", is that the design may in practice replace such impediments with equally demanding alternative requirements. So many new conditions may be imposed as the price for regulatory flexibility as to make the transition from conventional regulation to regulatory innovation, unappealing to business. By making "the conditions of entry into more flexible regulatory regimes too stringent, regulators risk discouraging entry."[236] Significantly, a number of regulatory innovations have achieved only a very lukewarm reception from the very business community which had called for them.[237]

There are a number of ways in which these problems can be overcome. First, the incentives for participating in regulatory innovation must demonstrably far exceed the disincentives. This means ensuring that the stringency of entry conditions required by innovative schemes does not make them unattractive to would be participants. To the extent that pollution prevention is more effective than insisting on compliance with the letter of existing regulations, even relatively lenient entry conditions will lead to greater overall emission reductions.[238] Government should take care to provide positive incentives for entry into such schemes. Moreover, the greater the flexibility that government provides within such schemes, the greater the opportunity for innovation and cost saving by business. For example, where practicable, government should facilitate the use of bubbles, netting, banking, and other economic related mechanisms geared to providing flexibility. The consultation requirements for entering such a scheme, while important, must also be kept within bounds. Participants in a range of "reinventing government" initiatives complain of the enormous burden and resources required to negotiate and to participate in such programs. Finally, the disincentives for breach of conventional regulation, including shaming, penalties, and enforcement must be sufficiently substantial as

236. For example, Pederson gives the example of proposals for regulatory capping, which would require 'capped' sources to adopt pollution prevention programs to reduce their emissions over time. He notes that "[t]he tighter and more detailed the baseline specifications, the fewer caps there will be, and the less room existing caps will allow for pollution prevention" (Pederson, *supra* note 167).

237. *See supra* note 227.

238. Pederson, *supra* note 167.

to encourage business to seek more palatable alternatives. At present, in many jurisdictions, inadequate enforcement currently plays a major part in businesses' lack of enthusiasm for embracing regulatory innovations.[239]

B. *Can Commercial Third Parties Reinforce the Role of Regulatory Flexibility?*

Commercial third parties can make potentially significant and far reaching contributions to environmental protection. Although not a prerequisite for "regulating at a distance," much can be gained from harnessing the capacities of commercial entities to act as surrogate regulators. In the chemical industry, commercial actors can exert considerable pressures on each other, by insisting on certain environmental credentials and standards.

1. Utilizing Supply Chain Pressure

By far the greatest pressure is likely to be exerted by trading partners. For example, large companies in particular, can insist that their upstream suppliers meet certain environmental standards. They may also bring pressure to bear on downstream purchasers or consumers to use their product in an environmentally responsible manner. Large companies can thus act as surrogate regulators.

Both Responsible Care and ISO 14001 incorporate mechanisms having the capacity to influence the environmental behavior of large firms and of reinforcing regulatory flexibility. Responsible Care uses not only peer group pressure, mutual support, and the information sharing, but also the product stewardship code to bring commercial pressure to bear from one company to another. In the case of ISO 14001, supply chain pressure is a central driver of conformance certification. Indeed, if the experience of its quality standard predecessor, ISO 9000, is repeated, ISO 14001 certification will become a condition of many customer/client contracts, inducing many enterprises close to the market to embrace ISO 14001 when they might otherwise have chosen not to do so. This may extend to many bilateral and multilateral relations.

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239. For the Australian approach, see Neil A. Gunningham, *Negotiated Non-Compliance - a Case of Regulatory Failure*, 9 LAW & POL'Y 69 (1987); and D. Farrier, *Policy Instruments for Conserving Biodiversity on Private Land in* CONSERVING BIODIVERSITY: THREATS AND SOLUTIONS (J. Bradstoock, ed., 1995).

Except to the extent that government itself is a major customer for many manufacturers, this development does not require any intervention from government. Governments, no less than private institutions, can choose to use their considerable purchasing power to support ISO 14001 certification by making it a requisite for their suppliers. However, directly or indirectly, governments have a close interest in how ISO 14001 and Responsible Care evolve, since these vehicles are likely to be central in delivering effective regulatory flexibility. Given the potentially crucial role that supply chain pressure can play in enhancing the effectiveness of these mechanisms and in acting as a partial surrogate for government regulation, government should make it a regulatory requirement that major capable enterprises have responsibility to ensure that upstream suppliers and downstream buyers comply with their regulatory responsibilities in respect of those products.

ISO 14001 already requires a certified enterprise to comply with existing legal requirements. This may serve to pull some suppliers up to the minimum legal standard. It also requires evidence of continual improvement. Where an enterprise has already signed on to another set of environmental commitments, it requires compliance with those principles.[240] How seriously certifiers treat these requirements in follow up audits will be interesting to see.

However, whether ISO certification will result in a substantial improvement in the environmental performance of those certified is uncertain. To the extent that suppliers treat the establishment of a management system seriously and provide the resources and the commitment necessary for effective implementation, environmental improvements are likely to follow. But such a response is by no means guaranteed. Rather, many suppliers may view certification as simply one more hoop through which they must jump to stay competitive. If so, they may simply do the minimum to gain certification, instead of providing the ongoing commitment necessary to bring about substantial organizational and environmental change. In this case, the audit capacity of buyers may prove crucial, for it is through this vehicle that they may be capable of subjecting their suppliers to strict scrutiny.

240. For example, where they had a commitment to the CERES principles or Responsible Care.

a. Insurance and Financing

Given the chemical industry's track record of fires and explosions, rapidly escalating insurance rates were one of the motivations for introducing Responsible Care in the first place. Indeed, several insurance companies had refused coverage. The insurance industry as a whole has become reluctant to provide gradual pollution coverage, i.e. coverage for environmental impairment liabilities arising from anything other than an accident. However, Responsible Care companies, particularly in Canada, are now receiving favored treatment from the insurance industry. Rates are being reduced. In one documented case, a major insurer has indicated it will reduce premiums by fifty percent if sound management systems are in place.[241] The rationale is that such a company will be more likely to be successful and less likely to become liable for environmental damage.

Similarly, the banking industry has been extremely concerned that it might face environmental liability for chemical contamination clean up, a fear that in the case of the U.S. CERCLA has already been realized. The result could be that capital for companies manufacturing or using hazardous chemicals becomes unavailable or extremely expensive. Again, in Canada Responsible Care companies now have "several points" deducted from their project financing rates.[242]

However, none of these developments flow naturally from market forces or Responsible Care alone. Take the case of environmental insurance. For such insurance to be a viable proposition, the insurance industry needs the capacity to identify and quantify risk based on the probability that individuals and/or the environment will be affected by a particular activity, the estimated severity of those affects, and their legal implications.[243] And the insurance industry needs to be able to do this with respect to each class of customers.[244]

In the past, these conditions have rarely been satisfied and the fragile environmental insurance market has not flourished. Gov-

241. *See* CANADIAN CHEMICAL PRODUCERS ASSOCIATION, DOES RESPONSIBLE CARE PAY? 7 (1996).

242. *Id.* at 241.

243. *See generally* P. FREEMAN & R. KUNREUTHER, MANAGING ENVIRONMENTAL RISK THROUGH INSURANCE (1997).

244. For an account of how insurers might employ environmental performance measurement in risk reduction strategies see David A. Henderson, *Lending Abroad: The Role of Voluntary International Environmental Management Standards*, 77 J. COM. LENDING 47 (1997).

ernment could play a role in creating those conditions by setting well specified standards and giving predictability to that market.[245] If the legal conditions are clearly specified and not subject to frequent change then insurers can not only better predict the legal implications and costs of environmental damage caused by their clients, they can also police those risks more effectively. Thus the insurers' own inspectors can scrutinize their client's compliance and impose sanctions (e.g. they can cancel the insurance policy if the legally prescribed standards have been contravened). In effect, their inspectors can inspect using the legal standard as their yardstick, and calculate the risks in terms of it.

However, the industry associations have been unsuccessful in persuading the insurance industry to give discounted premiums to Responsible Care companies on the basis that those companies were likely to be at substantially lower risk than non-member companies. Understandably, the insurance industry was reluctant to rely on evidence of self-reported compliance with the program codes. However, the introduction of independent audits in Canada has brought about a significant change in their attitude. The insurance industry (or at least significant parts of it) has now apparently been persuaded that there is sufficient *independent* evidence of improved performance on the part of those companies either to offer insurance where it would not have done so before or to offer substantially discounted premiums to Responsible Care companies.

While the danger remains that some Responsible Care companies may still not achieve the performance level the program anticipates, the introduction of independent audits (even in the absence of demonstrable performance outcomes) reduces this risk substantially. It is not necessary for the insurance industry to be sure that all Responsible Care companies meet the higher standard, merely that *on average* they do so. Thus, lower premiums can rationally and profitably be offered to the industry as a class. Were better performance indicators to be developed and companies audited against them, even greater opportunities for reduced premiums for best practice companies would be available.

245. *See* FREEMAN, *supra* note 243.

While ISO 14001 in its current form may well have too many shortcomings for it to be similarly relied upon,[246] it is quite conceivable that "ISO Plus" could be used in this manner. Banks and insurance companies may require ISO certification, with additions, as a prerequisite to lending and issuing and/or discounting environmental insurance. To the extent that governments can encourage and facilitate such developments, there will be both increased incentives for improved environmental performance by individual enterprises and a reduced burden on government resources.

C. *Strategies for Regulating Smaller Players*

The second and third groups identified earlier - upstream suppliers and specialty chemical manufacturers, and downstream purchasers and distributors present particular regulatory problems. Some participants in the chemical products supply chain are small in size, lacking in environmental specialization, skills, or even awareness of many of the environmental problems that their handing of hazardous products can cause. Commonly, such firms present the biggest headaches to government regulators. They are so numerous as to be hard to keep track of and are inspected only very infrequently. Yet, because of their lack of environmental awareness skills and specialized resources, coupled in some cases by economic marginality, they are among the least likely candidates for effective self-regulation.[247]

Some specialty chemical manufacturers present even more particular problems. These companies often have very narrow profit margins, are of modest size, and lack economic or technological sophistication. The capital intensive nature of chemical manufacturing compounds their problems. Small firms may have insufficient capital available for environmental or other improvements.[248] They are also beset by particular environmental challenges intrinsic to the production of specialty chemicals. To

246. Paul Freeman & Howard Kunreuther, *The Roles of Insurance and Well-Specified Standards in Dealing with Environmental Risks,* 17 MANAGERIAL AND DECISION ECONOMICS 517, 530 (1996).

247. Distributors can be distinguished to some extent: they act rather like regional supermarkets, buying in bulk supplying in smaller quantities within a particular area: in some cases custom blending, and in others, repackaging, for smaller customers. Some of these companies are quite large and the sub-sector as a whole, is profitable, with few players likely to be experiencing significant economic difficulties.

248. PRESIDENT'S COUNCIL ON SUSTAINABLE DEVELOPMENT, ECO-EFFICIENCY TASK FORCE, CHEMICAL OPERATIONS DEMONSTRATION PROJECT 24 (1995).

remain competitive, these firms must respond rapidly to customer demand. The orders they must fill vary greatly. As a result, they must produce a large number of batch chemicals, adjusting continually in response to their market. Their pattern of raw material usage, equipment configurations, and waste streams is very different from that of large companies.[249] Because of their modest size, they have far fewer human and economic resources to deal with the environmental problems this type of production spawns or to devote to regulatory compliance.[250]

For all these reasons, most of these firms are unlikely candidates for regulatory flexibility programs, though a minority might be capable of meeting the requirements of such programs and may be attracted to them if appropriate incentives are provided.[251] A substantial number of these firms may currently fall below the regulatory standard and are a far cry from "best practice." Their interest in and capacity to go "beyond compliance" by developing new and innovative solutions to their environmental problems is, in most cases, very doubtful.[252] They are also less amenable to a number of "pressure points" which can be utilized successfully against large enterprises. For instance, smaller enterprises will tend to have a much lower public profile than larger firms and will therefore be far less susceptible to community pressure.

So how should such groups be regulated and what instrument and policy mix is likely to be most appropriate to their circumstances? Government regulation is becoming much more sophisticated in dealing with such groups. In contrast to the older approach, characterized by chronic under-enforcement coupled with sporadic and unsophisticated education campaigns, some recent innovations show considerably more promise. These include:

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249. *Id.* at 23.

250. *Id.* at 24.

251. One particularly important incentive in the case of specialty manufacturers would be a waiver of the existing requirement to obtain a new permit or permit modification every time they embark upon a new batch process (using chemicals for which they have already been granted a permit) rather than to merely notify the agency of the new circumstances. This substantially slows their ability to get a new product to market. Flexibility in this area would provide considerable attractions to such firms.

252. Note their limited ability to identify and implement changes that might take them beyond compliance (e.g. pollution prevention audits, assessment of innovative technologies, systematic self-evaluation) which require both money and expertise.

1) Compliance assistance programs under which small businesses have regulatory requirements explained in plain English, cost-effective environmental protection and waste reduction opportunities identified, technical assistance provided and paperwork reduced;[253]
2) Compliance incentives which recognize that many smaller businesses want to be good citizens but fear asking for information because of possible enforcement action. Incentive programs provide small businesses that are minor sources of pollution with a grace period of up to six months to correct violations identified by compliance assistance programs.[254] Environmental audit policies in particular can provide incentives for self-policing, encouraging enterprises to identify their environmental problems and providing opportunities and to take corrective action;[255]
3) Compliance plans designed to recognize that "improving environmental performance takes time, and not all existing industries will be in a position to implement improvements immediately."[256] An enterprise may face practical difficulties in complying with a particular provision introduced by new legislation. A compliance plan is intended as a means of ensuring incremental improvements to bring the enterprise up to the legal standard within a given time;[257]
4) Provision of expert consulting services, training programs, and financial incentives and assistance. The European Commission is developing a uniform methodology for SMEs seeking to es-

253. BILL CLINTON & AL GORE, REINVENTING ENVIRONMENTAL REGULATION 31 (1995).

254. *See id.* at 30; *see generally* U.S. ENVIRONMENTAL PROTECTION AGENCY, POLICY ON COMPLIANCE INCENTIVES FOR SMALL BUSINESS (1996).

255. *See, e.g.*, 60 FED. REGISTER 66706 (1996).

256. NORTHERN TERRITORY OF AUSTRAILIA DEPART. OF LANDS, PLANNING AND ENVIRONMENT WASTE MANAGEMENT AND POLLUTION CONTROL BILL (1996).

257. To achieve this purpose proposed Australian legislation (see Northern Territory Department of Lands, Planning and Environment, information kit on Draft Waste Management and Pollution Control Bill, December 1996) provides that *pre-existing* industries that cannot comply with new legislative requirements made under an Environmental Protection Policy, environment protection order, authorization or Regulation, prepare and submit a compliance plan. Such a plan should detail a program of improvement aimed at achieving compliance within a specified period. Once approved, the compliance plan would have the effect of removing any liability for prosecution for non-compliance with the relevant legislative provisions. Failure to fulfil the requirements contained in the compliance plan would be an offence.

tablish EMSs[258] that would enable them to comply with the EMAS at an acceptable cost;[259]

5) Use of non-mandatory codes of practice in conjunction with performance standards as a means of giving small and medium sized enterprises the concrete guidance they demand, while retaining flexibility.[260] Those who do not want to devise their own solutions can simply follow the relevant code. Those who wish to be more innovative can devise other means of achieving the performance standard stipulated in the regulation;
6) Enabling SMEs to participate in an effluent trading scheme as a means to meet local discharge limits into publicly owned treatment works, thereby enabling industrial users to achieve the required overall reduction in pollutant levels more quickly and economically;[261] and
7) Facilitating hazardous waste exchanges so that materials that cannot be used by the facility that produces them, but could be safely and productively used by another facility can be exchanged, thereby providing environmental benefits and economic benefits to both parties. Government's role includes setting up or facilitating an information clearing house and educating enterprises concerning the benefits involved.[262]

These are strategies for dealing with firms who are ready and willing to comply, but do not necessarily know how to do so. Businesses that are not so willing or will only comply in the face of credible sanctions also need to be addressed. Specifically,

258. In the United States, many SOGMA members would claim to have the essential ingredients of a system, but not necessarily one that would satisfy ISO 14001, though it might in simplified form, contain some of the key components of ISO 14001. None (for reasons of cost) have any intention of formal certification under ISO. There is a trend towards adopting EMSs, but in many cases these are at present so rudimentary that they would not stand up to external audit and verification.

259. *See* PRESIDENT'S COUNCIL ON SUSTAINABLE DEVELOPMENT, TOWARDS SUSTAINABILITY 19 (1995).

260. Such codes are more flexible than regulations in that companies are not compelled to follow them, and non-compliance with the actions specified in a code is not in and of itself an offence. Rather, the onus is on the responsible party to prove, if challenged, that the action was "as good as" that in the approved code of practice. Thus companies who have the capacity to devise cost-effective and innovative means of achieving (or going beyond) the performance standard, are encouraged to do so while less advanced organizations have the benefit of specific indications as to how to meet the statutory standards. If the codes of practice adopted under Responsible Care are of a sufficiently high standard (that is, if they represent best practice environmental management) then these codes in themselves might be incorporated by reference into the relevant legislation, becoming the recommended mechanism through which the general duties and performance standards are discharged.

261. *See* U.S. ENVIRONMENTAL PROTECTION AGENCY, NEW JERSEY CHEMICAL INDUSTRY PROJECT, UPDATE 4 (1997).

262. *See id.*

given the economic problems facing many smaller enterprises and the lack of resources and incentives that such enterprises face in coming into compliance, inevitably a role remains for the enforcement of regulations as an underpinning and backstop to more creative and positive strategies.

Regulators face particular problems in devising an appropriate enforcement strategy including the large relational distance between small companies and regulators and the fact that inspections are very infrequent - with the result that there is little possibility of negotiating compliance through ongoing visits and dialogue. Because there are so few options, regulators often rely more heavily on deterrence.

What are the best of the very limited range of options available? Occupational health and safety experience suggests that "a visit [by an inspector] is likely to be relatively effective since small employers are more impressed than are many larger employers by the authority wielded by government inspectors."[263] An inspector's visit, coupled with some form of enforcement action (e.g. an "on the spot" fine), may have a significant impact on behavior, even in circumstances where compliance costs will likely exceed the economic benefits to the employer of compliance. Such action may serve to refocus employer attention on environmental problems they may previously have ignored or overlooked.[264] A regulatory agency can have a considerable impact by even a limited inspection program, provided it is reinforced by some degree of formal enforcement action sufficient to bring the problem forcibly to the employer's attention.[265] Full, or "wall to wall," inspections shall not be necessary.

However, formal enforcement should be a last resort since positive encouragement and voluntary compliance, to the extent that firms respond to them, is likely to achieve far better results than negative sanctions. Firms should first be provided with assistance and incentives to improve the environmental performance and redeem themselves. Specifically, inspectors could link the provision of other government programs to encourage envi-

263. ANDREW HOPKINS, MAKING SAFETY WORK: GETTING MANAGEMENT COMMITMENT TO OCCUPATIONAL HEALTH AND SAFETY 177 (1995).

264. John T. Scholz, *Cooperation, Deterrence and the Ecology of Regulatory Enforcement,* 18 L. & SOC'Y REV. 179, 182 (1984).

265. It may be that longer inspections have a much greater deterrent effect than superficial inspections that check only the plant's injury records. However, it would be dangerous to generalize from this to conclude that shorter inspections generally, are less effective.

ronmental protection with the execution of the spot fines, using the latter to underpin and to provide an incentive for firms to take advantage of the former. The best strategy is likely to incorporate both carrots and sticks: to use instruments that both push enterprises to comply and pull them to do so.

One of the best illustrations of this idea is the agreement between the State of Minnesota and the Printing Industry of Minnesota (PIM), a state wide trade association consisting of relatively small operations, designed to significantly increase the use of environmental audits by printing firms. It is based on the premise that a clear distinction should be made between firms that have adopted detailed, firm environmental compliance and pollution prevention policies and those that take little or no positive initiatives in respect to environmental protection. This agreement is designed "to better differentiate the good from the bad actors by increasing the incentives to voluntarily comply with environmental laws and to pursue pollution prevention initiatives."[266] By encouraging voluntary compliance, the scheme will enable regulatory resources to be redeployed and refocused on those who are not responsive to voluntary initiatives.

Under the scheme, the PIM established a separate corporation, PIM Environmental Services Corporation, to provide auditing services to PM members. However, it was also necessary to provide some incentive for firms to engage in such audits. Fearing damage to the integrity of their enforcement program government regulators were reluctant to provide a total amnesty from prosecution for breach of regulations, simply because a firm had engaged in such an audit. The parties reached an agreement whereby an auditing firm that discovers environmental violations and corrects them promptly will have this fact taken into account when regulators decide whether to initiate any enforcement action, whether an enforcement action should be civil or criminal in nature, and what penalties to impose. Thus "a company which conducts an auditing program in good faith and makes appropriate efforts to achieve environmental compliance is likely to mitigate the consequences of any violations it discovers."[267]

The PIM audit agreement could be used as a model for the rest of the chemical industry. Such a policy might result not only in

266. Hubert Humphrey III, *Public/Private Environmental Auditing Agreements: Finding Better Ways to Promote Voluntary Compliance,* 3 CORP. CONDUCT Q. 1, 2 (1994).

267. *Id.* at 23.

voluntary initiatives that substantially improved environmental performance, but also in a more flexible and cost-effective response on the part of participants than is likely to be achieved through traditional command and control government regulation.

D. *The Role of Private Orderings: Responsible Care and Product Stewardship*

While regulators are in the process of developing increasingly sophisticated strategies for dealing with smaller firms, given the sheer numbers of such firms, serious limits remain on the capacity of conventional regulation to reach them and to influence their environmental behavior. Given the inherent limitations of government regulation, are there other strategies capable of substantially improving the environmental performance of buyers, suppliers, and specialty chemical manufacturers? How can one complement government regulation and compensate for its inadequacies?

In the case of the chemical industry, first sight prospects for private ordering to control the behavior of smaller players are dim. Suppliers and most specialty chemical manufacturers often have no public reputation to protect, and are far less vulnerable to shaming or to threats to their reputation than the large firms with whom they may deal (so the role of environmental and public interest groups is therefore very limited). Moreover, they have less capacity than large firms to take a long term view of the industry's best interests. Because their livelihood largely depends on producing a small number of proprietary chemical mixtures, these companies are also considerably more reluctant to disclose information than their larger counterparts. While some engage in dialogue with local communities, many others make only token efforts to do so.

In some jurisdictions the relevant specialty chemicals industry association has adopted Responsible Care. For example, member companies of the United States Synthetic Organic Chemical Manufacturers Association (SOGMA) are now signatories to Responsible Care. Similarly, chemical distributor associations in Canada, the U.S. and the United Kingdom are exploring means of enhancing chemical distribution safety through partnership with Responsible Care. Driven in part by the need to counter attempts to ratchet up regulation, these initiatives may yet prove valuable. Mutual assistance networks, for example, enable com-

panies to effectively share information and expertise on the implementation of environmental improvements code principles. With the support of government the relevant industry associations can organize and administer these networks. The networks may stimulate awareness and technology transfer and encourage innovation and a commitment to environmental protection and waste management.

In the case of distributors, self-regulation has advanced substantially further. In the U.S., the Responsible Distribution Process includes a number of codes of practice, including product stewardship[268] and a third-party verification process. Moreover, the relevant industry association has taken steps to eject members failing to implement the codes.

However, with the exception of distribution, these initiatives are in their very early stages. It remains an open question whether associations whose members are less vulnerable to the pressures that generated Responsible Care in the first place - the breakdown of public trust, adverse publicity, and community outrage - and who have far less resources with which to address the problems will make the same degree of progress.[269] Progress has been slow to date. For example, SOGMA members are only gradually adopting the Responsible Care codes. It is too soon to say to what extent their behavior has been influenced by them. They have not, for example, committed to external verification. Thus, self-audit will be the only and dubious means of measuring their performance.

While participation in, or partnership with, Responsible Care, offers only uncertain opportunities for specialty chemicals manufacturers and suppliers, supply chain pressure[270] and more particularly product stewardship provide far more potential for delivering environmental improvements through informal social control. Responsible Care companies increasingly see these mechanisms as the most appropriate and effective means of substantially improving the environmental performance of suppliers, buyers, distributors, and specialty chemicals manufacturers.

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268. According to our respondents, companies do indeed refuse to deliver to others who manifestly do not have appropriate storage facilities for hazardous chemicals. However, we were unable to ascertain how widespread this practice was, or to obtain concrete examples of it.

269. Small companies find it more difficult. Often they subscribe to Responsible Care but they do not have the people and resources to take it to its full extent.

270. *See supra* p. 83.

Product stewardship involves taking responsibility for the health, safety, and environmental implications of a product from inception through to final disposition.[271] It necessitates cooperation with customers, distributors and contract manufacturers to ensure the product's safe handling after it leaves the plant. It embraces not only the manufacturers activities but also those of customers, distributors, and suppliers. Its overriding philosophy is that "everyone in your company and everyone in your downstream chain is a product steward."[272] The aim may also extend, where applicable, to upstream suppliers:

> . . . to ensure that any relevant health, safety and environment issues that arise in the development, manufacture, storage, transport, marketing, use, recycling or ultimate disposal of a company's products, packaging and related waste, are dealt with in socially and environmentally acceptable ways which meet with general community expectations, legal requirements and company policy.[273]

To these ends, product stewardship implies a continuous process of risk reduction in development, manufacturing, distribution, handling, use, and disposal, together with improvements in design, monitoring, education, and communication.[274]

While the commitment of large companies to the success of Responsible Care might be sufficient to ensure they become effective product stewards, there are additional self-interest reasons why they may choose to do so, principally, the threat of legal liability. As one industry insider states:

> . . . we cannot overlook the liability aspects of the chemical industry. We have learned that not only can we be sued whenever we misuse products, we also face liability lawsuits when our customers misuse them. By making our customers better stewards, we have reduced our liability as well.[275]

But legal concerns are not the only driver of effective product stewardship. Dow Chemical Company, the leader in this field, has found that its product stewardship program is an important

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271. *See generally* AUSTRALIAN CHEMICAL INDUSTRY COUNCIL (ACIC), PRODUCT STEWARDSHIP: INTERIM CODE OF PRACTICE 2 (1994).

272. David Rotman, *Pushing Pollution Prevention,* 148 CHEMICAL WK. 30 (July 17, 1991).

273. AUSTRALIAN CHEMICAL INDUSTRY COUNCIL (ACIC), *supra* note 271.

274. The key components are said to be "leadership, continuous improvement of risk management, effective communication of hazards, and forging of partnerships in the supply chain." Lynn Tattum, *Product Stewardship: Old practice, New Theory,* 153 CHEMICAL WK. 125-26 (July 7/14, 1993).

275. Sean Patrick, CMA NEWS, Sept. 1996, at 28.

sales tool,[276] reduces insurance premiums, and improves the company's public profile. Likewise, opportunities exist for large firms to provide commercial consulting services and to market their services to downstream customers. For firms capable of taking a long-term view, and with the sophistication and skills to implement an effective product stewardship program, enlightened self-interest may be sufficient to prompt effective product stewardship.

Given that upstream suppliers or downstream customers of large chemical companies may be reluctant to embrace these principles voluntarily, can large companies make product stewardship work? Because of the imbalance of power between large companies and their smaller suppliers and customers, undoubtedly they can. Small entities are often heavily dependent upon a small number of large trading partners for the large majority of their business. Some specialty chemicals manufacturers, for example, heavily rely on the work contracted to them by major companies. This gives large companies the leverage to ensure that small companies actually do all that a large chemical manufacturer requires.[277] In other cases of course, such as when chemical companies are supplying to large distributors, the size and dependency imbalance is far less. Fear of losing a sizeable slice of business may militate against a large chemical manufacturer threatening to withdraw its business in this manner.

Nevertheless, where size imbalance exists, then leverage which large companies can commonly exert over their small trading partners is crucial, particularly in the absence of any body capable of compelling compliance with self-regulatory standards. This makes product stewardship fundamentally important to the success of Responsible Care. As the only Code capable of inducing non-participants or reluctant participants to comply with its goals many industry figures argue that the Code will be more effective than legislation in ensuring that companies dedicate

276. In effect, Dow promises its customers that, through product stewardship, it will help them to identify and remedy their environmental problems and thereby keep out of trouble (Ronald Begley, *Implementing a Philosophy: Facing the Challenges of the Most Sweeping Code*, 150 CHEM. WK. 68, 68-74 (June 17, 1992).

277. In the case of the specialty chemical manufacturers, opportunities exist in both directions. For while larger companies can exercise scrutiny over the specialty manufacturers, and offer advice and technical assistance, the latter in turn can, consistent with the principles of product stewardship, make detailed inquiries and require information concerning the qualities and appropriate precautions concerning the chemicals they are dealing with on behalf of their larger clients.

time and resources to health, safety, and environmental concerns.

Under product stewardship, the environmental practices of small companies can be controlled through a combination of information, customer training, and auditing. First, large chemical manufacturers can provide information that many of their suppliers and customers lack. Second, they can educate and train suppliers, customers, and their employees on the safe handling, use and disposal of products,[278] share advanced technology on hazard minimization, and provide recycling or hazardous products reclamation facilities.[279]

To ensure that suppliers and buyers actually implement environmental safeguards, large companies can request information on storage, handling, use and disposal practices, insist on the introduction of appropriate EMSs, and oversee the effectiveness of these practices and systems through the periodic auditing of the supplier's safety and environmental practices. For example, Dow Chemical insists on conducting an audit before it agrees to supply a new customer with hazardous material, and routinely audits its distributors. An audit involves a team visiting the distributor's operations to examine handling, transportation, storage, and terminating techniques and prescribing improvements aimed at achieving environmental standards far in advance of current regulatory requirements.[280]

Any large chemical manufacturer also imposes specified levels of environmental performance as a condition of contract. They also scrutinize a tenderer's EMSs and past environmental record. Those factors weigh heavily in deciding to whom to award the contract. In effect, many large chemical companies now only deal with firms that can demonstrate satisfactory environmental performance. In the succinct words of one major chemical pro-

278. For example, some companies provide a training kit, and focus on making sure the customer is using the product in the intended way, keeping the customer informed about how the product should be handled, and helping the customer dispose of any hazardous wastes and by-products.

279. For example one major company has recently developed a recovery program for industrial solvents and cleaners, taking in cleaners no longer effective from customers, distilling them to recover the solvent, and safely burning any residue, giving the customer credit for any solvent recovered.

280. Marjorie Coeyman, *Making Product Stewardship a Reality,* 153 CHEM. WK. 37, 37-38 (July 7/14, 1993).

ducer "we do not hire the lowest bidder; we hire the carrier least likely to put our products into the Houston Ship Channel."[281]

Despite these advantages, product stewardship is harder to test, measure or pin down than the other Codes of Practice. As the CMA acknowledges:

> As far as measurement of management practice goes, we know we can't define it ahead of time. Since companies are all different, they'll have to pick their own unit [of measure] whether it's a product line or a business unit, but we don't see how it could be facility-based like the other [codes] are .[282]

In time, self-evaluations may shed further light on how effectively product stewardship is being implemented - though current efforts focus on perceptions rather than outcomes. These self-evaluations have to be both accessible to the public and subject to third-party audit if they are to have credibility,[283] and for this process to be reinforced by the development of independent performance indicators.

Even if this occurs, product stewardship will continue to face substantial challenges.[284] First, extending it backwards towards upstream suppliers[285] and maintaining control once the product has passed beyond the first point of sale[286] are difficult and sometimes intractable problems. These problems and others are exacerbated by the competing demands on corporate resources necessary to implement such an all encompassing code.[287] Where competition is fierce, a large firm may be most reluctant to sever relations with a small low-cost supplier that is unwilling to comply with product stewardship, unless it is confident that its

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281. This may serve to counter the temptation which some chemical companies have succumbed in the past, namely to sub-contract some of the dirtiest or most hazardous operations relating to chemical manufacture. Also see Gregory D. L. Morris, *Whistle Stop Tour Delivers Transcaer Message,* 153 CHEMICAL WEEK, 40-44 (Dec. 8, 1993).

282. Ronald Begley, *Product Stewardship: Exploring the 'How-To,* 149 CHEM.WK. 16, 13-16 (Dec. 11, 1991).

283. Such audits are contemplated at a later date (J. Smith, *Measuring Health, Safety and Environmental Performance: Why, What, and Whose?* (Summary of a paper presented to the ACIC Convention, NSW Feb. 21, 1994).

284. Marjorie Coeyman, *Making Product Stewardship a Reality* 153 CHEM. WK., 37, 37-38 (7/14 July, 1993) ; and Marjorie Coeyman, *Customers Get New Attention: Product Stewardship from the Buyer's Side,* 153 CHEM. WK. 34, 34-36 (Dec. 8, 1993).

285. Ronald Begley, *Implementing a Philosophy: Facing the Challenges of the Most Sweeping Code,* 150 CHEM. WK. 74, 68-74 (June 17, 1992).

286. Emma Chynoweth & Karen Heller, *Wanted: A System to Audit Care: Environmentalists and Industry Forge Ahead* 153 CHEM. WK. 28, 28-32 (June 17, 1992).

287. BEGLEY, *supra* note 285.

competitors are applying the same policy (another "mutual assurance" problem). Second, the Code's emphasis on disclosure of actual product use is meeting resistance from those who fear it may intrude on a customer's proprietary information. Third, unlike the other codes of practice, there is no obvious location within a company in which to entrench product stewardship. For example, the sales and marketing units which have direct customer contact have a strong disincentive to promote it, insofar a this will threaten their sales and commissions. Fourth, the Product Stewardship Code, at least in its present form, only addresses the systems adopted by suppliers and customers; it does not address the environmental outcomes they achieve.

In summary, while product stewardship is still evolving and may have an uneven impact on the behavior of upstream and downstream links in the supply chain, it contains the promise of influencing those groups in ways unavailable to government regulators. However, given its limitations and uneven impact it cannot replace regulation, but needs to be utilized in conjunction with it.

What is the most appropriate relationship between product stewardship and government regulation? Government's role should be to facilitate, encourage, and complement product stewardship. Such a strategy involves a number of components. First, it might involve various means of encouraging and rewarding product stewardship practices. For example, companies committing themselves to transparent and accountable forms of product stewardship could be rewarded public recognition and public relations benefits. Second, governments might identify limits of current initiatives and areas where additional efforts are needed and encourage voluntary efforts by "providing industry with the opportunity to apply its expert knowledge of its products and markets to the issues and to the formulation of response strategies."[288] Third, regulators might create market-based incentives on firms to achieve some product stewardship requirements, such as stimulating technology transfer. Fourth, small firms might be subject to differential enforcement policies dependent upon whether they had signed up for a transparent and accountable form of product stewardship. Finally, the effectiveness and breadth of product stewardship could be considerably increased

288. P. Dillon & M. Baram, *Forces Shaping the Development and Use of Product Stewardship in the Private Sector* in ENVIRONMENTAL STRATEGIES FOR INDUSTRY 340 (K. Fischer & J. Schot eds., 1993).

by a regulatory requirement for major companies to take on product stewardship requirements that are currently only voluntary and unenforceable.[289] Significantly, some regulations in Europe and the U.S. already require companies to engage in some forms of technology transfer.[290]

VII.
BROADER LESSONS

Thus far, both the limitations of traditional regulation and of more innovative alternatives, such as Responsible Care and ISO 14001, have been analyzed. However, recognizing the merits of innovative approaches, this article has suggested a number of ways of building on their strengths while compensating for their weaknesses. Drawing from that analysis, broader lessons from the chemical sector that can be applied to industrial regulatory design are identified.

Importantly, this process is intended to be evolutionary, not revolutionary, building on an existing regulatory framework - self-regulation in combination with command and control - through incremental change rather than a wholesale revision of policy direction. This approach necessarily restricts the range of instruments and strategies that might be invoked as compared to a scenario where there is no pre-existing regulatory framework.

A. *Instrument Ordering: Towards a "Two-Track" Regulatory Strategy*

There are many different types of companies when it comes to regulatory performance: leaders and laggers, those who are willing to go "beyond regulation" and those who are not, those who will comply voluntarily and those who will resist regulation to the extent it is rational to do so. Add to these the irrational and the incompetent and it becomes apparent that no single regulatory approach is likely to be appropriate in all circumstances. How then can regulation be designed to accommodate the very different characteristics and motivations of regulatees?

The best strategy is to provide incentives for those enterprises that would be willing to do more than the law requires, while also

289. These might include product warnings and labels, education and training programs, services, access to company personnel and guidance documents, purchasing contract and supply specifications and notification, screening and selection of suppliers, distributors or customers. *See id.* at 329-41.

290. *See id.*

supporting and assisting those generally smaller entities that are willing but at present incapable of even coming into compliance with existing regulatory requirements. Additionally, a strategy for dealing with willful and/or irrational polluters is also necessary. Some enterprises might be willing to do far more than current regulations require. Some firms, while less than perfect, genuinely strive to be regarded as good corporate citizens. To be sure, "the lure of virtue" is far from universal. One would be naive to suggest that it always triumphs over "the lure of profit." But a number of chemical manufacturers set an example for the rest of the industry. They are the "benchmark" companies. By inspiring imitation of their best practice, and by exerting competitive pressure, they have the potential to foster improved performance by other industry players, both large and small. One important role of best practice environmental regulation should be to facilitate such behavior and to nurture such virtue by providing a range of incentives.

A necessary first step is to create a legislative framework that harnesses market forces, so as to encourage rather than inhibit commercial drive and innovation. Governments should avoid overly prescriptive regulations and instead set targets, boundaries, or processes for achieving better results, leaving business to determine how best to reach those targets. Presumably, the drive to achieve competitive advantage will stimulate companies to achieve those targets voluntarily, often through technological innovations.[291] Already, some of the largest chemical manufacturers have declared an ultimate goal of zero impact.[292] While unrealistic in the short term, it exists as a constant reminder of the objective of continuous improvement.

The shift from a reactive *ad hoc* approach to pollution control to one where environmental improvement is integrated with an enterprise's core business activities is equally important. EMSs are the most appropriate vehicle for achieving this aim. Such systems, when successfully implemented, have proven capacities to achieve continuous improvement, cultural change, and substantially improved environmental outcomes. Commonly, they also save money by reducing resource use and achieving other efficiencies. However, the use of systems-based approaches is con-

291. MICHAEL PORTER, THE COMPETITIVE ADVANTAGE OF NATIONS (1990).

292. R. B. Shapiro, *Remarks To Society of Environmental Journalists* (speech by Chairman of the Monsanto Company) (October 28, 1995) <http://www.monsanto.com/MonPub/InTheNews/Speeches/951028Shapiro_Robert.htm>.

strained by two factors. First, they cannot be forced upon those who have no interest in adopting them.[293] Second, they are difficult to adapt to the needs of SMEs. Accordingly, they should not be incorporated in regulation across the board but only in particular circumstances. Two distinct types of regulation will be necessary: one for those firms which are willing and able to adopt a systems-based approach (which will be largely, but not exclusively, large firms)[294] and another for those which are not.

This implies the creation of a two-track regulatory system under which firms (or at least firms with certain environmental credentials[295]) are offered a choice between a continuation of traditional forms of regulation on the one hand (track one), and the adoption of an EMS on the other (track two). The latter will put primary responsibility on industry itself to find optimal means of achieving environmental performance outcomes, and will involve "regulatory flexibility" under a partnership between the regulatory agency, the enterprise, and the local community. Incentives to encourage firms to adopt track two, should be provided. To prevent abuse, various transparency and accountability mechanisms and a regulatory underpinning will also be necessary.

Though track one implies a conventional regulatory approach, it need not involve an adversarial relationship between the regulator and the regulated. Rather, even traditional regulation should allow a more cooperative approach for those who are motivated to comply voluntarily. Provision of advice and technical support can institutionalize responsibility[296] and is likely to achieve better results than grudging compliance in the face of negative sanctions. This article has suggested a number of spe-

293. As we have indicated, such an approach has the greatest potential where it would enable enterprises to make economic gains - where, in short, there is a coincidence between what is good for safety and what is good for private profit. Even here there may be resistance to adopting a systems-based approach, arising either from ignorance, incompetence or irrationality, or from the gap between short-term and long-terms gains.

294. Some small or medium sized firms will also be able to meet the requirements for more flexible regulation. Quite how many will depend largely upon the extent to which EMS requirements can be modified to meet the needs of such firms and the costs of certification against, say ISO 14001.

295. A demonstrated record of above average (or "good") environmental performance and no major violations, is an important "gateway" requirement which serves the important purpose of denying access to track two regulation to firms who, given their past environmental record, would be most likely to abuse it.

296. Gunningham & Rees, *supra* note 90.

cific cooperative strategies to enable smaller firms, in particular, to come into compliance, while also noting the considerable potential of industry self-regulation to facilitate mutual assistance - sharing best industry practices, helping companies that lack the technical and organizational capability to implement the codes, etc.

But a commitment to dialogue, persuasion, and cooperative problem solving only makes sense under the right circumstances; namely, when the principal source of non-compliance is not willfully disobedient, but rather lacks the organizational capacity to either understand or implement those norms.[297] Is a different approach necessary in those cases of non-compliance that stem from willful disobedience? The cooperative approach can all too easily turn into weakness and undue permissiveness. This permissiveness has led to the observation that:

> The problem with the persuasion model . . . based as it is on a typification of people as basically good - reasonable, of good faith . . . is that it fails to recognize that there are some [companies] who are not good, and who will take advantage of being presumed to be so. . . .[298]
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> . . . .For this last group, the bottom line must be a deterrence-oriented approach that makes it economically irrational for a business to ignore its environmental responsibilities. The appropriate maxim is to "talk softly, but carry a big stick."

Thus, good regulation involves invoking different strategies, depending upon whether or not business is genuinely willing to embrace regulatory flexibility and "beyond compliance" strategies, or, conversely, whether or not the enterprise is a willful polluter. This implies an ordering of regulatory responses by the state. The first preference is voluntary "beyond compliance" efforts with state encouragement through the provision of autonomy, flexibility, and other incentives but subject to certain safeguards including third-party audit and community participation ("track two"). The second preference is a state cooperative and supportive role facilitating compliance by enterprises lacking the resources or capacity to achieve results in the absence of such positive intervention. The third preference is a more directive,

297. Robert Kagan & John T. Scholz, *The 'Criminology of the Corporation' and Regulatory Enforcement Strategies in* ENFORCING REGULATION 67-95 (Keith Hawkins and John Thomas eds., 1984).

298. I. AYRES & JOHN BRAITHWAITE, RESPONSIVE REGULATION: TRANSCENDING THE DEREGULATION DEBATE 25 (Oxford University Press, 1992).

interventionist, and deterrence oriented approach so willful polluters do not benefit from non-compliance or gain an unfair advantage over those who comply voluntarily.[299]

The dilemma for regulators under such a "tiered response" is not confidently knowing in advance which classification a regulated firm falls into. A regulator's ability to distinguish rational economic actors from the irrational or incompetent is even more difficult. For example, if a regulator assumes that all firms that embrace Responsible Care or ISO 14001 will move beyond compliance with traditional regulatory standards, then it may devise a regulatory strategy that stimulates voluntary action by enlightened enterprises but which is incapable of effectively deterring those who have no intention of implementing tangible improvements. On the other hand, if regulators adopt a regulatory strategy on the assumption that all firms fall into the second category, they will unnecessarily alienate (and impose unnecessary costs on) those who would comply voluntarily.

A solution to this dilemma, is the regulatory enforcement pyramid.[300] At the bottom of the pyramid regulators assume that business is willing to comply voluntarily without any threat from government. However, they also make provision for disappointment by being prepared to escalate up the enforcement pyramid to increasingly deterrence oriented strategies. Thus known departures from compliance are met with escalating or de-escalating state responses depending on the subsequent behavior of the regulatee. Credible enforcement is essential to the success of the enforcement pyramid. In return:

> A paradox of the pyramid is that the signaled capacity to escalate regulatory response to the most drastic of measures channels most of the regulatory action to the cooperative base of the pyramid. The bigger the sticks at the disposal of the regulator, the more it is able to achieve results by speaking softly.[301]

In summary, ordered regulatory strategies and ordered regulatory enforcement responses incorporating escalating responses to non-compliance, should be adopted.

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299. To the extent that the irrational do not respond to education and encouragement, they may still respond to penalties. Irrationality is a relative concept. There are few who will not respond to criminal sanctions and these may ultimately face closure, a sanction that even the irrational cannot ignore.

300. AYRES & BRAITHWAITE, *supra* note 298.

301. J. BRAITHWAITE, *Responsive Business Regulatory Institutions* in BUS. ETHICS AND THE L. 83, 88 (1993).

B. *The Limits of "Stand Alone Instruments": Towards Co-Regulation and Tri-partism*

What are the essential prerequisites for either self-regulation or EMS to function as effective and efficient agents of public policy? What is the most appropriate relationship between either of these approaches and government regulation? And how can an appropriate integration of government, community and industry involvement be achieved? These questions entail a recognition of the need to integrate these mechanisms into a broader regulatory mix so that their weaknesses can be compensated for and their strengths built upon. Designing appropriate co-regulatory and tripartite mechanisms is crucial to integration.

Based on evidence from the chemical sector, the four key components necessary to achieve the successful integration of "regulatory flexibility" and traditional government regulation (in essence, what we described earlier as a two-track regulatory system), and the meaningful engagement of non-commercial third parties are:

1) Those enterprises engaging in regulatory flexibility ("track two") should adopt practices and processes that pursue "beyond compliance" goals and include outcome-based requirements, the achievement of which can be measured through specific performance indicators;[302]
2) There should be independent verification both of the functioning of management systems and environmental performance under these systems (e.g. by a third party environmental auditor), with the results or a summary of the results available both to the regulator and third parties such as community groups (transparency);
3) There should be an ongoing dialogue with local communities concerning "beyond compliance" goals and the means of achieving them, thus ensuring the credibility and legitimacy of the process and enabling third-party input and oversight;
4) There should be an underpinning of government intervention that acts as a safety net, only "kicking in" when triggered by the failure of the other less intrusive mechanisms. The principle objective of these requirements is to ensure that the proposed

302. Among the most important features of such systems are: incorporating pollution and waste prevention into core business practices; accounting for the total environmental impact of choices throughout the life cycle of products and services; improving efficiency; considering environmental costs to society in business decisions; employing planning processes to illuminate pollution prevention and product stewardship opportunities; and striving to improve continuously.

> forms of regulatory flexibility deliver demonstrable, measurable outcomes and gain community credibility.[303] This means that business, government, and the community, must be directly involved in decision-making. In the environmental arena, where firms are often unwilling to implement regulation voluntarily, and where regulatory agencies are frequently under-resourced and relatively ineffective, then clearly public interest groups can and do play an important role. Thus critical components of a policy mix will be independent third party oversight rather than self-regulation, and tri-partism rather than bi-partism, and an underpinning of government regulation (co-regulation) acting as a back stop where other mechanisms fail.

C. *Regulatory Surrogates*

Regulatory enforcement is an essential but time consuming and expensive task. Given over-stretched and often shrinking government regulatory resources, they must be used efficiently. Therefore, policymakers increasingly confront whether or not it is possible to identify alternative methods to either replace or complement government regulation. Where there is a viable option to delegate regulatory responsibilities to other parties ("regulatory surrogates") resources can be re-deployed to areas where there is no alternative to government enforcement. In addition to relieving some of the fiscal burden on the state, regulatory surrogates may enable the redeployment of scarce resources where no alternatives to state intervention exist. However, regulatory surrogates should only be used where they provide overall effectiveness and efficiency gains. This is not always the case. For example, the intent of some self-regulatory initiatives is to confuse the public and keep regulators at bay rather than to genuinely further environmental protection goals.[304] Similarly, the added costs involved in mandatory disclosure of environmental information may, in some circumstances, outweigh the efficiency

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303. See here the parallels with the U.S. EPA's Environmental Leadership Program, which anticipates explicit inclusion of compliance assurance, pollution prevention and community outreach as core components of an environmental flexibility program built around an environmental management system.

304. See for example JOHN BRAITHWAITE & BRENT FISSE, *Self Regulation and the Costs of Corporate Crime* in PRIVATE POLICING (Clifford D. Shearing & Phillip C. Stenning eds., Sage Publications, 1987); Peter Cerexbe, *Advertising Self Regulation: The Clayton's Codes*, 38 CONSUMING INTERESTS 16-20 (1988).; MICHAEL BLAKENEY & SHENAGH BARNES, *Advertising Deregulation: Public Health or Private Profit* in BUSINESS REGULATION IN AUSTRALIA (Roman Tomasic, ed., 1984),; and Alan C. Page, *Self-Regulation and Codes of Practice*, J. OF BUS. L. 24-31 (1980).

gains of enhanced enforcement. Likewise, surrogates for government regulation may cause conflict with other assessment criteria, for example in terms of their equity implications or political acceptability. These too, would need to be mitigated or overcome.

1. Potential Regulatory Surrogates and Their Roles

Non-government parties that might play the role of surrogate regulators, acting as informal instruments of social control, fall into one of four categories: regulated enterprises, industry associations, commercial third parties and non-commercial third parties.

First, individual enterprises might regulate themselves. In a modest way, they are often required by law to self-police. For example, companies commonly may be required to monitor their own releases and report departures from permit requirements. More broadly, initiatives such as Responsible Care and ISO 14001 assume that they will do far more: by implementing and administering sophisticated codes of practice and environmental management systems. However, without external oversight, there are enormous opportunities and temptations to cheat. Even if enterprises do not succumb to these temptations, the community is unlikely to be convinced by claims of environmental excellence based purely on self-monitoring and self-reporting.

Second, industry associations might play an important role in the regulation of member companies. However, such a role requires an organized and diligent industry association, supported by the majority of members. Rarely is that the case. For instance, with Responsible Care, the chemical industry association has not been given sufficient powers to fulfil this role. This serves to emphasize the grave dangers involved in relying on industry association self-regulation alone and the critical roles likely to be played by third parties and an underpinning of government regulation.

Third, commercial third parties can make a very different, but often more important contribution to environmental protection. As seen in the chemical sector, they can do so principally through exerting supply-side pressure, where larger firms can both assist and bring pressure upon their smaller vendors to achieve environmental goals. Such assistance could take the form of environmental management expertise, quality control, product design, advice on clean technologies, or regulatory compliance audits.

The objective is to deliver mutually beneficial outcomes. Smaller firms gain expertise to improve their environmental performance in a way that reduces compliance costs and improves productivity and larger firms gain a more reliable, cleaner, and efficient supplier. The influence exerted by financial institutions such as banks and insurance companies over their clients, and the power of markets (e.g. the power of financial institutions, investors and green consumers over individual companies) is another example of commercial surrogacy. The monitoring functions of commercial surrogates, reinforced by sanctions, can often be more effective than government regulation. Financial markets, can also reward firms that demonstrate a commitment to cleaner production.

Finally, non-commercial parties, and in particular community and environmental groups, have become influential participants in the environmental arena. Extrapolating from the chemical industry, there are at least two opportunities for these groups to encourage improved industry performance. First, the community can motivate firms to enhance their public image. Local communities, regional, and national environmental groups, or even trade unions can and do scrutinize the behavior of firms. Provided they have access to sufficient relevant and reasonably accurate information, they can pressure firms through a combination of adverse publicity, whistle blowing, litigation, and local community politics. Second, community representatives may directly engage industry in a partnership role.[305] The NCAP in Australia provides one such example.

The use of independent auditors is also a form of non-commercial third party regulatory surrogacy. Although in many instances the cost of the audit will be borne by the enterprise, the relationship is "non-commercial" in the sense that the activity does not relate to the enterprise's normal business activities and there is no ongoing commercial relationship. The certification and performance of management systems adopted under ISO 14001 is a typical example.

Sometimes, a combination of two surrogacy options may be adopted. Under Responsible Care firms self-monitor and self-report under the supervision of their industry association but

305. An outstanding example of such constructive engagement is the work of the Alliance for Environmental Innovation, established by the Environmental Defense Fund and the Pew Charitable Trusts. Catherine, *Advocacy Groups and Business form Enviro Alliance*, MASS HIGH TECH, Mar. 1996, 4-17.

may also be subject to periodic third-party audit. One major consequence of the use of surrogates is to recast the role of government regulators. With far less need for their direct involvement, regulators may intervene only to the extent that surrogacy mechanisms break down. The government's role may be that of facilitator or broker, ensuring the effective involvement of appropriate third parties, rather than that of direct participant.

The potential to harness non-government parties as surrogate regulators is, however, not without limits. For example, there may be no genuine community to exert pressure on a company. Or time, energy, and opportunity costs involved in attending meetings, negotiating, or otherwise participating in dialogue with companies may prove overwhelming. Again, financial institutions may be preoccupied with the bottom line, rather than with the means of getting there. Despite the considerable attractions of regulatory surrogates, none is likely to be effective as a "stand alone" instrument. Each case must be integrated with, or function against, the backdrop of some continuing form of state intervention.

D. *De-Centering the State: Government as Facilitator, Catalyst and Activator*

Between the polar extremes of deference to spontaneous market orderings, and the "Regulatory State", there is often a middle path. Rarely considered by regulation or deregulation proponents it entails the government acting as catalyst, facilitator, and activator rather than as direct regulator. Many of the regulatory modifications suggested by our analysis of the chemical sector, in particular the use of regulatory surrogates, require such a role change. Pertinent examples in which the state can adopt this new mantle include:

1) A state agency chooses to endorse a self-regulatory program such as Responsible Care, or the activities of a particular company in compliance with it, by permitting the use of an agency logo or other official seal of approval, thereby giving the public greater confidence in the code's credibility;[306]

306. There is no provision under the Australian *Trade Practices Act* 1974 which gives the ACCC the authority to endorse a Code although the Commission has allowed this on at least one occasion (see the Australian Scanning Code). Similarly the New Zealand Ministry of Consumer Affairs has no statutory power to endorse or sanction any code officially, nor to give permission for the use of the Ministry's logo in the promotion of a code. While the Ministry of Consumer Affairs has openly acknowledged its role in the development of codes, it signed as such in the original

2) Government provides the conditions conducive to appropriate private sector initiative. For example, government might encourage supply chain pressure through the incorporation of product stewardship provisions into regulatory flexibility (e.g. as a condition of track two regulation) or it might enact legislation making all manufacturers responsible for their products throughout their life-cycle;
3) Government directly influences manufacturers through its purchasing power, making certain environmental requirements conditions of government procurement contracts. In this manner, government adopts the role of a commercial third party, as opposed to a regulator. As a dominant purchaser in many markets, government can provide a leadership role in dictating market preferences for products by developing and implementing a green purchasing policy;
4) Government harnesses the influence of financial intermediaries, such as banks and insurance firms, or financial markets, such as investors and consumers. The role of these third parties depends on access to reliable and independent information, based on accurate indicators of environmental performance, to enable them to take environmental performance into account when determining a firm's financial worth, whether to grant it a loan, or a differential insurance premium. Government can ensure that the necessary information to leverage financial institutions to support the improved environmental performance is readily accessible;[307]
5) Government enables non-commercial third parties to function as an effective countervailing force to industry power. For example, "good neighbour agreements" between chemical firms and local residents are common and potentially effective in both Europe and the United States.[308] Here, government must insist on community participation as a condition for regulatory flexi-

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EFT code, it has not developed policies or conditions for endorsement of codes (comments received from Bob Hillier at the New Zealand Ministry of Consumer Affairs (Apr. 1996)).

307. For example, in the United States, it was only once financial markets had access to reasonably accurate indicators of environmental performance (in the form of the government mandated TRI and disclosure requirements imposed by the Securities and Exchange Commission) that the environmental record of individual firms began to be reflected in their stock price (*see* Stanley Feldman, Peter Soyka & Paul Ameer, Does Improving a Firm's EMS and Environmental Performance Result in a Higher Stock Price? (1996) (ICF KAISER CONSULTING GROUP, FAIRFAX, VIRGINIA, U.S. WORKING PAPER).

308. They feature means by which concerned citizens have access to information relating to regulatory compliance, and the right to inspect facilities and to review compliance and accident plans. With community support, the strategy becomes a legally enforceable contract. "Good neighbour agreements" can provide firms with

bility. For example, participation in the U.S. EPA's Project XL means community organizations and other local stakeholders have the opportunity to vet and shape a firm's environmental management strategy. Project XL may also mandate the provision of information and technical support as a necessary prerequisite to make such a policy effective;

6) Government acts as a clearing house for information, as in "waste exchanges" in which one facility's waste can be productively used in another but the firms lack the information or opportunity to make such exchanges.

In a wide variety of circumstances, government can function more effectively by "steering rather than rowing" judiciously facilitating third-parties to perform more effectively, many of the functions it performed directly in the past.

E. *Accountability, Transparency and Consultation*

As we have seen, neither Responsible Care nor ISO 14001, nor any other management systems-based approach, is likely to function effectively in the public interest in the absence of adequate mechanisms ensuring accountability and transparency. With self-monitoring an enterprise will be tempted to misrepresent results, particularly if there are regulatory or public relations benefits to be gained. Whether firms succumb to this temptation or not, the public will not trust the results.

Where a tradition of adversarial legalism inhibits disclosure, industry has been extremely reluctant to reveal more information about its activities than it has to. Even under Responsible Care, this resistance to disclosure is only gradually being reversed. But a substantial portion of the industry has now realized that transparency and accountability are essential. For without them, firms will lack the credibility and legitimacy that are fundamental prerequisites to the grant of regulatory flexibility and greater autonomy of action.

To overcome these temptations and reassure both regulators and communities that an enterprise is indeed achieving claimed results, and to bring pressure upon those whose performance is below standard, a number of mechanisms of accountability and transparency might be invoked. The necessary first step is the promulgation of the principles and practices that the industry accepts as a guide to appropriate conduct. The Responsible Care

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a strong incentive to engage in cleaner production activities. However, they are only likely to be appropriate for larger firms with a reasonably high community profile.

codes of practice, or the management system requirements under ISO 14001 fulfill this role:

> [A]n industry's public commitment to such principles can generate new expectations of accountability, both inside and outside the industry, including demands for more concrete and specific norms . . . [and because] industry, by clarifying the normative standards it sets for itself, including performance indicators and implementation timetables, also provides more precisely defined measures for evaluating and criticizing its performance. With increasing transparency, in short, accountability is more readily maintained.[309]

However, such normative standards are only valuable if they measure variables that are important and appropriate indicators of performance. This article has noted the importance of establishing independent performance indicators. But the results will only have credibility if the data gathering processes have integrity. Who does the monitoring, who pays for it, and who, if anyone verifies that process are central questions.[310]

Finally, accountability and transparency will be enhanced if forms of public disclosure enable comparison of enterprises against each other and against an independent outside standard (e.g. a regulatory performance standard). In this last respect, both ISO 14001 and Responsible Care fall far short of the ideal.[311] For example, Responsible Care's limited progress can be contested against the achievements of another advanced self-regulatory body, the Institute of Nuclear Plant Operators ("INPO"), that has for some years ranked nuclear plants by safety performance. The INPO communicates this information to the industry in such a way as to make industry Chief Executive Officers ("CEOs") acutely aware of the relative status of their

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309. GUNNINGHAM AND REES, *supra* note 90.

310. The establishment of an independent and transparent audit, certification or verification process, such as is now evolving under the Canadian Responsible Care Program, (and is required by the International Council of Chemical Associations as the eighth fundamental feature of Responsible Care) is one means of answering these questions and of achieving credibility. Under ISO 14001 third party certification is optional though not mandatory. However, it may be that firms will prefer such certification to their own in-house audits because of the greater credibility which such "arms-length" auditing will provide.

311. In the case of ISO 14001, this limitation is inherent in the standard itself: over and beyond legal compliance, enterprises set their own performance goals and there is no common standard against which they can be measured. In the case of Responsible Care, the indicators so far developed and the data gathering process itself fall seriously short of this goal, which it is not however, impractical to attain.

plants and the implications.[312] This is a powerful accountability mechanism capable of "institutionalising responsibility and building moral competence into the structure of the enterprise."[313] Whether Responsible Care will ever develop to this degree of transparency and accountability remains a moot point.[314] ISO 14001 certainly will not. While some companies are now seeking commercial advantages through voluntary disclosure and transparency (usually through an environmental annual report) they are a minority. The bulk of enterprises continue to resist such disclosure.[315]

Information disclosure mandated by government, such as CRTK, is premised on the assumption that public interest groups, if empowered by sufficient information, can act as an effective countervailing force.[316] It also encourages introspection, helping firms to identify waste reduction opportunities independent of external pressures. Regulation through information is made doubly effective if the citizens and commercial actors who have access to information about corporate and government agency pollution are granted the opportunity to sue regulatory agencies for failure to enforce regulations and to sue corporations if the Environmental Protection Authority (EPA) is unwilling to file suit itself.

Finally, closely related to issues of transparency and accountability is the role of community participation and dialogue. The active encouragement and institutionalization of public participation are crucial not only because of their democratic benefits,

312. J. V. Rees, HOSTAGES OF EACH OTHER: THE TRANSFORMATION OF NUCLEAR SAFETY SINCE THREE MILE ISLAND (1994).

313. *See* GUNNINGHAM & REES, *supra* note 90.

314. Significantly, under Responsible Care in most countries, even the names of companies who withdraw from the program (for whatever reasons) is not made public, because of a policy of protecting the confidentiality of the industry association's membership. Even the advanced Canadian program suffers from this serious shortcoming.

315. Some companies believe transparency can lead to competitive advantage through enhanced access to planning permission, and reduced call for regulation, as well as improved public image. The Monsanto Annual Environmental Report was a leader in this development.

316. In the United States, CRTK legislation has enabled community groups to construct a league table of polluters - the best, the worst and the most improved. The resulting backlash has prompted a number of major chemical manufacturers to reassess their own operations and to modify their environmental control strategies, even in the absence of government legislation requiring them to do so (Neil Gunningham & A. Cornwall, *Legislating the Right to Know*, 11(4) ENVTL & PLAN. L. J. 274, 274-288 (1994).

(those who have had an opportunity to participate in decisions feel much greater ownership of them) but because there can be no genuine partnership in environmental decision-making without them. Moreover, they can provide important benefits in terms of environmental performance "[i]n the long run, the empowerment of local interests and institutions through stakeholder processes should help to find creative solutions and to harmonize national goals to local needs in a sustainable society."[317]

Responsible Care has a number of consultative mechanisms already in place. In addition to information-based strategies, they include the role of the National Community Advisory Panel in scrutinizing draft codes and other proposals and the developing contribution of regional community groups. ISO 14001 makes no comparable attempt to build in community consultative mechanisms. ISO Plus, or other variations of regulatory flexibility, must necessarily do so.

F. *Complementary Instrument Combinations*

What are the broader lessons concerning the regulatory mix to be learned from studying the chemicals industry? Perhaps most striking is the extent to which the approach this article advocates relies on complementary combinations of instruments and actors. The weaknesses of Responsible Care, ISO 14001, and other management systems can be compensated for and overcome through a combination of performance indicators, third party audits, community right to know and other forms of community input, and through an underpinning of government oversight. Indeed, there is now almost a convergence of thought among those seeking to design various forms of regulatory flexibility in the US that these are indeed the core ingredients of a successful alternative regulatory approach.[318]

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317. PROGRAM FOR ENERGY, THE ENVIRONMENT AND THE ECONOMY, THE ASPEN INSTITUTE, ASPEN INSTITUTE REPORT: THE ALTERNATIVE PATH: A CLEANER, CHEAPER WAY TO PROTECT AND ENHANCE THE ENVIRONMENT (1996). See section on building stakeholder processes.

318. See for example, the U.S. EPA's Environmental Leadership Program, and Project XL, and the reports of a variety of think tanks including the ASPEN INSTITUTE'S THE ALTERNATIVE PATH (1996), THE NATIONAL ENVIRONMENTAL POLICY INSTITUTE'S "REINVENTING THE VEHICLE FOR ENVIRONMENTAL MANAGEMENT" (1995); *see also* the Yale Center for Environmental Law and Policy's Next Generation Project and the forthcoming report of the Enterprise for the Environment. More generally, see the approach taken by members of the Risk Management and Decision Processes Center at the Wharton School, University of Pennsylvania.

However, in addition to designing complementary, integrated combinations, four additional elements of optimal regulatory mixes must be emphasized: better results through the activation and reinforcement of one instrument by another; "push-pull" combinations; complementary enforcement options; and avoiding counterproductive combinations with unintended consequences.

1. Activation and Reinforcement

It is both possible and desirable to select combinations of instruments in which one instrument activates and/or reinforce the effect of another. For example, the chemical industry had long sought to achieve a reduction in insurance premiums for participants in Responsible Care, both to make the scheme more attractive (perhaps leading to recruitment of new members) and to reward better environmental performers. But the insurance industry lacked any independent indicator of the performance of Responsible Care members and was not willing to rely on self-assessment by individual companies. The introduction of independent third-party audits in Canada has increased the credibility of the program with the public and local communities, and has also given the insurance industry the independent verification it required in order to discount premiums. Independent verification has served to activate differential insurance premiums which in turn increase the economic benefits of Responsible Care and serve as an attraction to participation. The promise of differential premiums could serve as an inducement to develop independent audits in the first place. In this respect independent audits and premium discounting are mutually reinforcing. In similar fashion, financial markets can respond to environmental performance if given sufficient information.[319]

Rather than playing an activating role, some instruments enhance or reinforce others. For example, in the abstract, Responsible Care's codes of practice are only voluntary measures which provide only guidance to members and are of no consequence whatsoever to non-members. However, they indirectly shape the regulatory environment, and influence the firm's perceptions of

319. Financial markets can play an important role in rewarding firms with a demonstrated good environmental record, but only if they have sufficient independent information to enable them to do so. There is evidence that the introduction of the Toxic Release Inventory had precisely this effect. See FELDMAN, SOYKA & AMEER, *supra note* 307.

it. In many jurisdictions, companies have a general legal obligation to conduct their operations with "due diligence," or reasonable care. The definition of due diligence is often imprecise. However, in part, courts address this definition with reference to the accepted standards of the relevant industry. For the chemical industry, courts will likely look to Responsible Care as a standard for both Responsible Care members and non-members.[320] Non-participants in Responsible Care are at greater risk of legal liabilities than members. Thus Responsible Care and due diligence are mutually reinforcing: due diligence becomes more precisely defined as a result of the Responsible Care codes, and the Responsible Care codes become enforceable through due diligence.

Self-regulatory mechanisms such as Responsible Care can be reinforced by other means. As discussed, compliance with their terms can be made a term and condition of contracts in the supply chain. Government procurement contracts can make participation a prerequisite for tendering. Codes may be cross-referenced with other voluntary and legal regimes: for example, under ISO 14001 a participant who has signed on to a voluntary program such as the CERES principles or Responsible Care is required to comply with the terms of that program in order to obtain ISO 14001 certification. Similar combinations may be equally important with enforcement. For example, both government inspectors and insurers may play, overlapping, but in important respects, different, enforcement roles, which as a result are more commonly reinforcing than redundant.

2. Using Combinations that both "Push and Pull"

Organizations are commonly complex entities with multiple objectives, and indeed, multiple selves:

> [M]ost business actors are bundles of contradictory commitments to values of economic rationality, lawfulness, and business responsibility. Business executives have profit maximizing selves and law-abiding selves; at different moments, in different context, the different selves prevail.[321]

As a result, strategies that appeal to different parts of the organization, and to its different motivations, that combine both

320. See CANADIAN CHEMICAL PRODUCERS ASSOCIATION, DOES RESPONSIBLE CARE WORK? 8 (1996).

321. I. AYRES & J. BRAITHWAITE, RESPONSIVE REGULATION: TRANSCENDING THE DEREGULATION DEBATE 31 (Oxford University Press, 1991).

carrots and sticks and that both pull and push enterprises towards better environmental performance, are more likely to be more effective than those that invoke only one of these approaches. Take the free-rider problem. There are essentially two ways to overcome this problem.[322] First, strategies designed to enhance voluntary compliance (environmental leadership groups, the sharing of technology, peer groups, and other forms of mutual support) can be employed. Or, effective monitoring and enforcement mechanisms to deal with non-compliance can be maintained. Yet neither of these elements will be sufficient alone. The widespread consensus necessary for the successful operation of a voluntary scheme can only be nurtured and attained through the first category of mechanisms. Inevitably, some will defect or otherwise abuse a voluntary scheme, making the second category equally essential. Only when both trust and verification are used together will the scheme becomes a viable one.

A similar point applies to ISO 14001. While this article has emphasized the importance of providing a series of incentives for enterprises to participate in regulatory flexibility programs incorporating ISO 14001 (or "ISO Plus") those incentives will function much better if alternatives to participation are made less palatable. For example, if intensified enforcement activities focus on non-participants relative to participants, both the push of negative sanctions as well as the pull of positive rewards will induce enterprises to join. The widely acclaimed Maine 200 program is another example of effectively harnessing combinations of push and pull strategies. It offers a partnership role to those willing to improve voluntarily while in effect "blitzing" recalcitrants through a program of intensified inspections and enforcement action.

3. Enforcement through Complementary Combinations

This article has emphasized the importance of effective enforcement and offered methods by which this might be achieved. The article has stressed the virtues of looking first to the regulatory capacities of business and third parties, with government's role

322. Bryan Purchase, *Political Economy of Voluntary Codes* (1996), a draft paper presented at the Voluntary Codes Symposium, Office of Consumer Affairs, Industry Canada and Regulatory Affairs, Treasury Board, Ottawa, September and to be included in EXPLORING VOLUNTARY CODES IN THE MARKETPLACE, edited by David Cohen & Kernaghen Webb, Government of Canada, Ottawa (forthcoming).

being principally that of backstop, underpinning other cheaper, and often more effective private forms of intervention. Even in circumstances where it is possible to invoke private parties as surrogate regulatory enforcers, they are unlikely to be wholly successful in this role unless it is possible for them to take convincing action at every level of the enforcement pyramid, including, crucially, the tip. But in the large majority of circumstances they lack this capacity. Thus, with enforcement as with instrument mixes generally, the best option may well be the design of complementary combinations of institutions and instruments.

With Responsible Care, since the industry association lacks the ultimate capacity to invoke "big stick" sanctions at the tip of an enforcement pyramid,[323] the credibility of sanctions at lower levels of the pyramid is also weakened.[324] As a result, Responsible Care cannot be successfully enforced in isolation. Indeed, this is a common failing of self-regulation and a major reason why there is a compelling need, even with many of the best self-regulatory programs, to complement self-regulation with some form of government and third party involvement. In a real sense, the presence of state and third party institutions provides the basis for industry self-regulation.

Precisely what form of state (or third party) intervention will provide the most appropriate underpinning will vary with the particular circumstances of the case. However, it is at least possible to identify some of the most commonly important variables, and to illustrate by example, how co-regulation and tripartisanism might operate to optimal effect in particular circumstances:

1) *The role of the general law*: Self-regulation operates in the shadow of rules and sanctions provided by the general law. These rules and sanctions are the most obvious and visible, but not the only, means of giving regulatees an incentive to comply with a self-regulatory program. The relationship between Responsible Care and the laws relating to due diligence is a good example. Evidence from a variety of jurisdictions, suggests that it is fear of government regulation *and its enforcement* that drives the majority of self-regulatory initiatives.[325] It seems un-

323. For example, even a wider range of sanctions under self-regulation may not work against recalcitrants. Shaming cannot work against firms with no reputation to protect. Expulsion cannot work where firms can still operate effectively outside the industry association.

324. On pyramid see in particular, AYRES & BRAITHWAITE, *supra* note 298.

325. See The Dutch study in Marius Aalders, *Regulation and In-Company Environmental Management in the Netherlands*, 15(2) LAW AND POL. 75 (1993).

likely that they will perform well, in the absence of sanctions only government has the authority to invoke.

2) *The role of third parties*: Third parties acting as surrogate regulators will often be a useful complement to the role of general law. Indeed, it is arguable that self-regulation is unlikely to be effective without such involvement.[326] The most obvious third parties interested in playing this role are community groups, environmental groups, or NGOs generally. This contribution may be through their use of adverse publicity or in their capacity as potential victims of code malpractice, in taking direct action against firms that breach the self-regulatory program. There may well be a growing role for private inspection and certification services as alternatives to "policing" by government agencies or interest groups. Withdrawal of certification would be the ultimate sanction.[327] Commercial third parties, such as insurance companies or lenders, may also serve as surrogate regulators, enforcing their interests through withdrawal or denial of insurance or access to capital. However, since the sanctions available to third parties are rarely adequate to deal with all circumstances or to escalate to the top of the pyramid, they are better viewed as a complement to, rather than as an alternative to, government enforcement.

4. Counterproductive Mixes and Unintended Consequences

Ill considered mixes can cause unintended consequences and be counterproductive. For example, neo-liberal economists often advocate liability rules as preferable when the free market alone will not produce optimal results. These economists argue these rules are less interventionist and more efficient than direct regulation. Yet liability rules have a number of serious limitations, and can be highly counterproductive because of the impact which they have on other policy instruments. For example, this article contends that transparency and accountability are essential aspects of many policy mixes. Yet liability rules (particularly under the adversarial and litigious U.S. system) provide a considerable disincentive to companies making information about their environmental performance public for fear of liability entangle-

326. Kernaghan Webb, & Andrew Morrison, *The Legal Aspects of Voluntary Codes* in EXPLORING VOLUNTARY CODES IN THE MARKETPLACE 6 (D. Cohen & K. Webb eds.).

327. AL GORE, FROM RED TAPE TO RESULTS: CREATING A GOVERNMENT THAT WORKS BETTER AND COSTS LESS (1993).

ments.[328] In the case of the U.S. chemical industry, companies are deterred from using accident event analysis to gather information aimed at improving safety and environmental performance for fear that the same information will be used against them as a basis for civil liability.[329]

Similarly, this article has highlighted the considerable potential in the chemical industry to facilitate "waste exchanges" whereby one facility's "waste" can be productively used by another. Take a simple example, if one small chemical company is discharging an alkali waste and another an acid one, a simple exchange may serve to neutralize many of the problems those chemicals may cause when discharged into the sewer. Yet the rigid and onerous requirements of U.S. legislation regarding hazardous wastes may serve, unnecessarily, to inhibit or prevent many such transfers. Again, the mandatory disclosure of environmental audits and their use in criminal proceedings can lead to a reluctance to engage in such audits in the first place.

Finally, while we have advocated the virtues of tripartisanism and empowering community groups and environmental NGOs, an untrammeled right to bring citizen suits can be counterproductive. For example, some incentives for litigation (e.g. bounty hunting provisions) can encourage groups to sue the easiest targets rather than the worst polluters, and even when they do not, such actions threaten to damage long-term negotiated strategies between regulators and industry.

G. *Political Acceptability: Achieving Win-Win Solutions*

One of the evaluation criteria for regulatory design is political acceptability. There may well be a tension between achieving this result and optimal efficiency or effectiveness. In the real world, many solutions that fall short of optimality will nevertheless be extremely valuable. Pragmatists reasonably question whether a solution can be found under which none of the main stakeholders are appreciably worse off, and some are better off. Given the serious defects in most existing systems of regulation, such outcomes should not be difficult to identify. In some cir-

328. David Hunter & Elizabeth S. Kiesche, *U.S. Implementation Time*, 10 CHEM. WK. 10 (June 17, 1992).

329. Irvine Rosenthal, *Major Event Analysis in the US Chemical Industry: Organizational Learning vs. Liability* (Wharton School of Business, University of Pennsylvania, Philadelphia, Working Paper 1996).

cumstances it may be possible to find solutions under which *all* of the stakeholders are better off.

The main proposals we have made for regulatory flexibility and, in particular, for "track two" regulation building on Responsible Care or ISO 14001 may provide such solutions. For regulators, they promise enhanced objectively demonstrated environmental performance (including in areas not covered by regulation), reduced transaction costs (allowing redirection of scarce resources), more timely and better information flow from companies (via the annual audit under ISO), the transfer of monitoring costs to the firm and increased community involvement. For public interest groups, the proposals promise not just better environmental performance but also meaningful public consultation and dialogue that includes better access to information and better quality information concerning business environmental performance. For business, they offer enhanced credibility (not just with the community, but also with trading partners and government), greater flexibility and autonomy, positive environmental and (arguably) economic outcomes,[330] and reduced transaction costs.[331]

VIII.
CONCLUSION

The skeptical reader may conclude that the above discussion has been idealistic, and that political realities preclude significant redesign of industry regulation, particularly in relation to a sector such as chemicals with a relatively mature regulatory environment. While conceding that some regulatory systems are more amenable to reform than are others such skepticism is unwarranted. For example, the adversarial regulatory culture in the U.S., with its associated legislative and political gridlock, makes regulatory reform much more difficult than in the more consen-

330. In addition to facilitating "win-win" solutions (see MICHAEL PORTER, THE COMPETITIVE ADVANTAGE OF NATIONS (MacMillan Press, 1990) regulatory flexibility may lead to reduced insurance premiums, reduced risk of litigation, and the flexibility to devise least cost solutions to environmental problems. However, the start up and indeed continuing costs of implementing an EMS may be considerable particularly for small companies).

331. I am indebted to a current Wharton School project for parts of this list (*see* P. Kleindorfer, *Market Based Environmental Audits and Environmental Risks: Implementing ISO 14000* (The Wharton School, University of Pennsylvania, Philadelphia Working Paper 1996).

sus-based cultures of Northern Europe.[332] But changes have begun to take place in both settings.

Indeed, the speed and extent to which the regulatory environment is changing is striking. Ideas that four years ago were barely on the agenda are today part of the political mainstream. While substantial redesign of the regulatory environment (in the chemicals sector or elsewhere) still seems some ways away in all but a very few countries, much else has happened. The proliferation of pilot projects, of experiments at the federal, state, and local level, and the whole thrust of "reinventing environmental regulation" in the U.S., and to a lesser extent initiatives sparked by the Fifth Action Program in the European Union, have advanced the regulatory reform debate substantially, and in ways that are largely consistent with (albeit differently conceptualized to) the themes and arguments of this article.

Out of this experimentation and re-examination of environmental regulation the building blocks for successful environmental policy design may gradually emerge: a managerial and less directive role for government; a broader range of instruments; and the capacity to harness the potential of a wider range of institutions and combinations rather than the single instruments or institutions acting alone. However, this is happening ad hoc, without coherence, and in the absence of any broader framework or theory of regulatory design within which these developments might be located and better understood, mistakes minimized and opportunities maximized.

332. The impact of individual programs is similarly likely to vary substantially. For example, in general, Responsible Care has developed much further in North America and Australia than it has in Western Europe but even within the latter there are significant differences between countries. It has proven much less popular in Germany (where the dominant approach is "engineer driven" or "performance oriented" than in the U.K., where companies are much more "management driven").