CRC 8/92

POLICING POLLUTION: REGULATING THE CHEMICAL INDUSTRY

Report for the Criminology Research Council 1994

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Executive Summary

This study examines the role of self-regulation as a strategy for environmental protection. In particular it explores the chemical industry's Responsible Care Program, a far-reaching and sophisticated self-regulatory scheme intended to reduce chemical accidents and pollution, to build industry credibility, and to involve the community in decision-making.

The study identifies the collective action problems and other weaknesses of Responsible Care and argues that a more effective approach to environmental regulation of the chemical industry would be tripartite, involving co-regulation and a range of third party oversight mechanisms.

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ENVIRONMENT, SELF-REGULATION AND THE CHEMICAL INDUSTRY: ASSESSING RESPONSIBLE CARE*

I INTRODUCTION

Self-regulation is, and is likely to remain, a key component of most regulatory regimes and a widespread and influential force in the economy. In Australia today, there are at least 500 self-regulatory arrangements administered by industry and professional associations, in areas as diverse as service and advertising standards; information disclosure and customer complaint handling; professional standards; and stock exchange and futures market controls (TPC, 1988).

In the United States, self-regulation is similarly prevalent (Bardach and Kagan, 1982, Regulation Symposium, 1988), and has become more so with the ideological swing to neo-liberalism. Industry self-regulation,[1] according to its advocates, offers speed, flexibility, sensitivity to market circumstances and lower costs. Because standard setting and identification of breaches are the responsibility of practitioners, with detailed knowledge of the industry, this will arguably lead to more practicable standards, more effectively policed. Moreover, because self-regulation contemplates ethical standards of conduct which extend beyond the letter of the law, it may significantly raise standards of behaviour.

Yet self-regulation has an extremely tarnished image, and is often reviled by conservationists, consumer organisations and other public interest groups for being little more than a sham - a cynical attempt by self-interested parties to give the appearance of regulation (thereby warding-off more direct and effective government intervention) while serving private interests at the expense of the public (see, eg. Braithwaite & Fisse, 1987; Cerexbe, 1988; Blakeney & Barnes, 1984; Page, 1980). As John Braithwaite has put it: "Self-regulation is frequently an attempt to deceive the public into believing in the responsibility of a irresponsible industry. Sometimes it is a strategy to give the government an excuse for not doing its job" (Braithwaite 1993: 91). According to the critics, self-regulatory standards

are usually weak, enforcement is ineffective and punishment is secret and mild.

Despite these criticisms, self-regulation continues to play a crucial role as a component of regulatory strategy. In respect of the environment, it has been in the past, and seems likely to be in the future, a central pillar of regulatory policy. Perhaps the most graphic recent illustration of this is the outcome of the Earth Summit: The United Nations Conference on Environment and Development (UNCED) in 1992. The agreements which resulted from UNCED are likely to influence national and international environmental policy-making for many years to come. What is most striking about these agreements (see particularly Agenda 21)[2] as they relate to business is the extent to which they emphasise self-regulation which, (together with economic incentives), is likely to take centre stage in future environmental policy-making (Zagema, 1992: 44; UNCED, 1992: Chapter 30; Gleckman, 1992)

So how effective can self-regulation be, in protecting the environment? More particularly:

- How and under what circumstances can industry self-interest be harnessed to serve the public interest?
- What are the strengths and weaknesses of self-regulation in the context of environmental protection?
- To what extent can we learn from the limitations of existing systems and design more effective alternatives?
- To what extent and in what circumstances can industry self-regulation replace, supplement or complement government regulation?
- To what extent is self-regulation best seen as part of an overall regulatory mix?
- Under what circumstances is there a role for co-regulation, and what form should co-regulation take?

This study examines these crucial questions by exploring the chemical industry's Responsible Care Program - a self-regulatory scheme intended to

reduce chemical accidents and pollution and to involve the community in decision-making. The reason for focusing on Responsible Care is that it is not only the single most advanced and sophisticated scheme of self-regulation in the environmental area, but it is also one of the most developed and far-reaching regimes of self-regulation to be found anywhere in the western world. Indeed, in the view of many, Responsible Care is likely to be the blueprint for such self-regulatory initiatives as may evolve in other industries in the future (see, e.g., Hunter, 1991).

The empirical work on which the present study is based3 was conducted in Australia (one of the first countries to adopt Responsible Care), and to a lesser extent, in the United States. The article draws heavily both on the Australian and on the North American experience, and many of its conclusions are likely to be applicable to Responsible Care internationally.4 Moreover, its arguments may have a broader resonance for other schemes of self-regulation, both in the environmental arena and in other areas of social policy.

II. THE NEED FOR RESPONSIBLE CARE

Over the last 50 years the public image of the chemical industry has changed from that of the miracle provider of scientific products enhancing the well-being of community to that of the demon, capable of destroying the world in the interest of private profit. Industry polls have consistently revealed a high level of public anxiety and distrust of chemical manufacturers, with companies commonly being regarded as greedy, rapacious and irresponsible. In the United States, an opinion poll conducted in 1990 found that the chemical industry's rating of public acceptability had dropped to twenty five percent - only the tobacco industry has a lower rating. Over sixty percent of the public rated the industry as "very harmful to the environment" (Lewis, 1991:2). Similarly, in Australia, a 1992 survey of community attitudes concluded that the:

> chemical industry is associated with pollution, danger, explosives and possible ill-effects from the use of chemicals and chemical based products. It is also associated with secrecy, lack of public disclosure, possible dishonesty and lack of

ethics. Its operations are of concern [to] more than twice as many participants in the study as any other industry (Motive Market Research, 1992 11, 12).

It is not hard to see how the chemical industry's image has become so seriously tarnished. Across the globe, there have been numerous industrial catastrophes involving chemical industry installations. In 1984 at Bhopal in India, at least 3,000 people were killed and some 200,000 injured when twenty tons of lethal methylisaocyanate escaped from a Union Carbide chemical plant (Shrivastava, 1992). In 1976, at Seveso in Italy, the failure of a pressure vessel resulted in large quantities of deadly dioxin escaping into the countryside surrounding the chemical plant. Many thousands of people have been placed under long-term medical and epidemiological surveillance. The ultimate health impact is not yet known (Withers, 1988).

In the United States there were 17 potentially catastrophic industrial accidents between 1964 and 1989, releasing toxic chemicals estimated to have volumes and levels of toxicity exceeding that released at Bhopal (Shabecoff, 1989).[5] In Australia, since May 1985, at least nineteen dangerous incidents involving chemicals have occurred in Melbourne alone (Smithers, 1989: 13).[6] Of these, perhaps the explosion at the Coode Island chemical storage facility in 1991 will live longest in the memory of the public. The explosion resulted in a chemical cocktail drifting over sections of Melbourne, and exposed substantial shortcomings in safety precautions, emergency response planning and in procedures for public access to information (see further Adams & Ruchel, 1992).

In the United States, the chemical industry's 1.59 billion Pounds of releases represents 44 percent of the national total and three times that of the next major contributor (the metal industry) (Begley, 1992a: 8). Similarly in Australia the chemical industry is also the largest single domestic producer of hazardous wastes although precise figures are not available (Snowy Mountains Engineering Corp. 1992; PIAC, 1991: viii). Small wonder then, that the chemical industry finds itself in the front line of environmental fire, targeted by conservationists, local communities, local, State and Federal agencies and the media, all of whom demand that it clean up its act, and threaten dire consequences if it does not.

Responsible Care is the chemical industry's response to that pressure. It is an attempt to improve the industry's poor public image,[7] to restore public faith in the industry's integrity, and to take the heat out of demands for stricter government regulation.[8]

There are compelling reasons of economic self-interest for engaging in such a strategy. In the long-term, the chemical industry's very poor public image is 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". Without a change in public attitudes, the chemical industry's long term survival is under threat. As one Australian 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 (Holmes, 1992: 3).

The Dow Chemical Company's Annual Report in 1989 admirably summarised the view prevailing amongst some of the more far-sighted companies in this area: "One issue more than any other will affect Dow's prospects in the 90s and beyond. That issue is the environment." In a similar vein, Du Pont Australia's Chief Executive, Richard Warburton, told an industry conference in 1993 that:

> Despite our importance to the economy and despite the number of jobs we support directly and indirectly, we will not be allowed to operate in a reasonable manner unless we operate in what the public perceives is a safe manner (Warburton, 1993).

Sceptics might see Responsible Care as primarily a public relations exercise, a cheap way to change the public's perception of the industry without taking the hard and extremely expensive measures necessary to effectively clean-up the chemical industry. According to this view, pictures of dolphins frolicking next to oil tankers, soothing and reassuring images of wildlife and wildflowers thriving in the vicinity of chemical plants, and of white-coated scientists taking rigorous precautions to ensure the absolute

safety of an industrial complex, are cynically exploited mechanisms designed to reassure the public and preserve the viability and market power of the chemical industry at a comparatively modest cost.

However, Responsible Care has the potential to be far more than mere public relations. There is some evidence that during the 1980s the industry came to the fundamental realisation that it was not possible to effectively change the image without changing the reality. As one senior executive put it, the major chemical companies concluded they "just [could not] advertise their way out of it" (Greenert, 1991). In an industry where major disasters such as explosions and serious accidents simply cannot be disguised it is arguable that the industry decided that to alter the public perception it needed to greatly improve its performance, and in a way that was visible to the public. The result is Responsible Care, the most significant and far reaching self regulatory scheme ever adopted in Australia, or arguably, elsewhere.[9]

III. WHAT IS RESPONSIBLE CARE?

Responsible Care is a chemical industry initiative whereby chemical companies commit themselves to the improvement of all aspects of their performance which relate to protection of health, safety and the environment. This includes a commitment to improving relations with customers and communities, product use and overall operation.

Proponents of the scheme describe it as "the most ambitious and comprehensive environmental, health and safety improvement effort ever attempted by an industry" (Hirl, 1992), as "a total, public commitment to continuous improvement of management and performance in the arenas of health, safety, and the environment... a commitment to the responsible management of chemical industry products from cradle to grave, from the lab to disposal or destruction" (Chem Week 1991) and as "a journey of profound cultural change, [the chemical industry] opening its doors to a sceptical public and saying "Don't trust us, track us" (Sandman, 1991).

Responsible Care began life with the Canadian Chemical Producers Association in the mid-1980s, was adopted by the US chemicals industry

shortly thereafter, and in 1989 was introduced in Australia. It has subsequently been extended to over 30 countries worldwide. In Australia, Responsible Care was initiated by the Australian Chemical Industry Council (ACIC) which covers eighty-five percent of the industry sector (by volume) or about forty percent of the chemical industry.[10] ACIC has more than ninety members, all of whose chief executives have signed agreements committing their companies to the program.[11]

Responsible Care has two basic characteristics. The first is the progressive establishment of a number of Codes of Practice. According to the ACIC, these:

> become the rules (in addition to prevailing legislation) by which member companies operate. Adoption of these rules and compliance with them is a condition of Council membership. This requirement, firmly applied, is necessary in order to ensure that the industry's claims are meaningful and credible (1993: 2).

At present, eight Codes of Practice are contemplated, involving transportation; community awareness and emergency response; waste management; warehousing and storage; community right-to-know; product stewardship; manufacturing; and research and development. According to the ACIC 1993 Annual Report:

> All eight codes reflect industry best practice adapted to Australian conditions. They go beyond regulatory compliance by specifying the management systems, hazard minimisation and community involvement required to ensure reliable and improved performance (1993: 5).

The second characteristic of Responsible Care is the commitment to community participation and consultation. This is achieved principally through the establishment and functioning of the National Community Advisory Panel (NCAP). This panel comprises "a cross-section of individual community thought leaders with particular concerns for environmental safety and health issues" (ACIC, 1993: 3). NCAP is intended to provide a vehicle through which the public may play an integral role in shaping the Responsible Care initiative. NCAP members review proposed codes of

practice from a public interest perspective, and they alert 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: "would be sensitive to community concerns, provide information on possible hazards, encourage community involvement in emergency response planning and establish a regular process of positive communication" (1993: 3). 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" (ACIC, 1993: 3).

These provisions, although specific to Responsible Care as it has developed in Australia, are in large part modelled on its North American predecessors.

The scheme promises a commitment to genuine improvement which goes .beyond compliance. with existing environmental legislation. Its aims are :to rebuild the industry's credibility through improved performance and increased communication with all sections of the community; to develop optimum and practical goals for improvement in all areas of the industry's operation, and most particularly in those areas which potentially impact adversely on the community; and to demonstrate by development, adoption of and compliance with Codes of Practice that the industry is responsible and responsive. In this manner, proponents of Responsible Care intend to demonstrate that the industry is comprised of good corporate citizens, thus ensuring its continuing growth and prosperity.

IV. CAN RESPONSIBLE CARE DELIVER EFFECTIVE SELF-REGULATION?

The chemical industry has characteristics that could make Responsible Care one of the small minority of cases in which industry

interest and public interest are sufficiently coincident for self-regulation to be a viable regulatory strategy. The critical features are that Responsible Care is driven by the large, transnational corporations that dominate the chemical industry internationally[12], and that these companies have both the motivation and the capacity to implement the changes to industry practice and culture that the scheme contemplates. However, whilst the scheme may be in the long term interests of the large industry players, it is vulnerable to pressures imposed by (1) the market's demand for short-term profit, and (2) the divergence between the interests of the transnational corporations and small and medium sized companies.

Large multinational corporations are heavily reliant on their corporate image for their commercial success. Union Carbide learnt this lesson the hard way in the wake of the Bhopal disaster. More recently, Exxon also suffered disastrous public relations consequences (not to mention massive financial liability) when the Exxon Valdez ran aground in the previously pristine waters of Prince William Sound. Corporations can respond to these sorts of misfortunes in a variety of ways. One relatively cheap solution is for a company to disassociate from potential disasters related to its activities. In future, we are unlikely to see many oil tankers emblazoned with the names of their transnational corporate owners, and ownership itself 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 anything like the same extent. Chemical disasters (and even incidents without serious consequences) tend to be highly visible and readily identified with individual installations and their corporate owners. Large chemical corporations usually find that it is not possible to improve the corporate image without changing the reality through improved environmental performance.[13]

Of course, there is nothing to prevent individual companies from improving their own environmental performance without invoking Responsible Care, and many of them are in the process of doing so. Some of the leading transnational chemical companies have made far-reaching commitments to reduce emissions and improve environmental performance[14] and Monsanto goes so far as to provide an annual report on

its environmental performance, documenting in some detail its progress towards achieving its very ambitious environmental commitments.

Here, the main motivators may include a genuine commitment and concern by senior executives and others to environmental responsibility. They also include not just improved corporate image and community relations, but also competitive advantage and increased profitability. Firms that take a proactive stance on the environment commonly save substantial sums of money and thereby increase profit directly, for example through improved energy efficiency or recycling (Gunningham, 1994). They may also develop the environmental technology to compete more effectively in the global environmental technology market (Gunningham, 1994).

However, it is clear that individual initiatives will not be sufficient to give the industry as a whole the credibility it badly needs to survive and prosper in the long term. As one industry spokesman recently pointed out: "Du Pont and other majors can't rest on their accomplishments. They need to recognise that any incident in the industry destroys the credibility of everyone.. Canadian Chemical Producers Association President 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. (1991). It also exposes the industry to tougher regulatory requirements, obstacles to development and community backlash.

This theme was echoed by Du Pont (Australia) Chief Executive, Richard Warburton, when he argued that:

> the chemical industry has a responsibility to the rest of the industry. We have an obligation to keep one another safe and accountable...That's because in terms of safety , we are only as strong as our weakest link" (Warburton, 1993,3,4).

What this means in practical terms is that each company in the chemical industry must act as its brothers' keeper. Thus a mechanism must be found, nationally and internationally, to continuously improve the environmental performance of all companies, large and small. Big companies decided that that mechanism should be Responsible Care. But is it up to that task?

The single largest obstacle to the success of a self-regulatory scheme such as Responsible Care is that environmental protection and private profit do not necessarily coincide, and are not perceived to coincide, particularly given the emphasis of most corporations on short term profitability (see further Gunningham, 1994). A survey conducted in 1991 by Tufts University's Centre for Environmental Management polled corporate environment, health and safety directors and chief executive officers of 98 of the 4500 largest US corporations doing business overseas. When asked what prevents their companies doing a better job on health, safety and environmental issues, the highest number of respondents, fifty three per cent, cited emphasis on short term profitability (Rappaport & Flaherty, 1991). Similarly, a 1992 survey of the chemical industry highlighted a discrepancy between industry executives' general belief that Responsible Care will help their companies succeed, and the view that environment, health, safety and training spending will not help profitability (Hunter 1993).

There are a number of reasons why this is so. 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.[15]

Individual managers face a similar dilemma. They 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 longer term to look forward to.[16] Significantly, business unit managers in particular, tend to exhibit scepticism about recovering environmental costs in the market. This is a serious obstacle to improved corporate environmental performance, for

> As long as middle managers, with their pivotal position in implementing changes throughout a company, perceive "environment" as a threat to their own functioning, it is unlikely that the top-down vision of senior management can be realised in practice (Rogers 1992: 31).

Having said that, it is clear that some types of enterprise are in a far better position to take a long term view and to achieve long term objectives than others and it is here that the distinction between large and small enterprises becomes crucial.[17] First, it is clear that those firms which are economically marginal (generally small to medium sized enterprises) cannot afford the luxury of a longer term view. For them, the likelihood of sacrificing environmental concerns for short term profit (or survival) is very high indeed. Such firms many also be most heavily reliant on old, inefficient plant and as a result, most commonly emit the greatest amounts of pollution. It is usually far more expensive to retrofit such plant with advanced pollution technology than it is to incorporate state of the art environmental technology into new plant.

As one industry observer put it:

> 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 (Abrams & Ward, 1990: 135).

In contrast, in circumstances where companies have substantially higher profit margins and a rapidly changing or advanced technology, they are in a far better position to take environmental initiatives which yield only a long term dividends. Larger enterprises and transnationals in particular, by virtue of their market share and other advantages,[18] can usually afford to consider a range of goals in addition to short term profits. 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? This connects closely to the question: what are the chemical industry's prospects in the same time frame?

Moreover, such firms also have the technological capacity and the economies of scale to make environmental improvements both technically feasible and economically realistic (see further Pashigan 1983). In these circumstances, spending on environmental protection, even if not directly profitable in the short term, may be consistent with such other corporate goals as social responsibility, creating a good public image, maintaining

good employee relations, or forestalling direct government regulation. Thus firms may, consistent with an acceptable level of profit, choose to achieve standards of environmental protection that are higher than those which the market would normally permit.

Finally, as we have indicated, for large corporations with a high public profile, the consequences of a poor environmental record are likely to be both substantial and visible, making environment a high corporate priority. In contrast, many smaller enterprises do not have a public profile and their reputation and profitability may be far less affected by a poor environmental record. Accordingly, in the absence of external pressure they are unlikely to undertake significant remedial environmental action.

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 characterised 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 (Rogers 1992: 30).

Thus it is primarily the enlightened self-interest of large corporations that is likely to provide the driving force for environmental improvement through Responsible Care, and which provides the best chance of harnessing private interests to public ends. In contrast, many smaller enterprises, facing the unpalatable financial consequences of voluntary action under Responsible Care, are unlikely to embrace it with enthusiasm. Indeed, as one industry respondent put it: "Once organisations start to apply the codes of practice it hits home how much work is involved. It's OK for large companies like --- which is well down the track anyway, but a lot of cost and effort for many other companies." Another industry respondent in Australia put it more bluntly: "Once they realise it will cost the industry three billion dollars, they'll drop it like a hot brick."

This indeed is what seems to be happening currently in Australia. The Australian 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, and the threat that the Community Right to Know code of practice could force them to disclose commercially sensitive information.[19]

This divergence of interest within the chemical industry gives rise to serious collective action problems which threaten the viability of the Responsible Care scheme. Small companies often have the worst safety, health and environmental problems, and commonly lack both the means and the motivation to solve them. Left to their own devices, many of them will continue to inflict substantial environmental damage, which may well in itself defeat Responsible Care's attempt to improve the image of the Chemical Industry as a whole. If a significant number of smaller companies do not comply, then large companies lose much of the incentive to continue their own voluntary action. If the public fails to distinguish 'good' and 'bad' companies, but rather blames the industry as a whole, for the sins of the worst transgressors, then 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, puts itself at a competitive disadvantage to its more pragmatic rivals, who may continue to pay lip-service to Responsible Care, but do little to further its long term ends.

In terms of game theory analysis, there are two ways to view this problem. The first is to assume that each firm will succumb to the temptation to .free ride., that is, to take advantage of the willingness of other firms to spend on cleaning up the environment, while refraining from doing so itself as a matter of rational, economic self-interest (see Olson, 1965).[20]

It may be, however, that 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. (see Ford Runge, 1984). On this view:

> the group member (i.e. firm) does not withhold its contribution to the public good (e.g. a cleaner environment) based on a rational calculation of costs and benefits involved...but rather does so because it is unable to obtain the necessary assurance that other firms will contribute their fair share (Maitland, 1985: 132-147 at 134).[21]

That is, it may be that firms are prepared to shoulder equal or fair shares of the expenditure necessary for their long term interests to be achieved rather than invariably seeking to maximise individual short-term gain (often at the cost of a collective good). If so, then we can expect firms to regulate their own behaviour if such regulation is necessary to ensure the long term viability and prosperity of their industry, *provided* they are confident that other firms are doing the same (Maitland, 1985: 134).

On this analysis, there is hope for the success of Responsible Care, but only if it can be structured in such a way as to give firms (particularly large firms) the necessary assurance that others will contribute their fair share (or in the first version, preventing defectors from free-riding.

Clearly there are two serious obstacles confronting Responsible Care . First, the collective action problems identified above must be overcome if the scheme is to succeed. If the larger companies who want Responsible Care to work do not find a way to put effective pressure on recalcitrant members of the industry to comply with the Responsible Care codes, the .assurance problem. will probably prevent the scheme fulfilling its aims.

However, the resolution of the collective action problem will not in and of itself guarantee the fulfilment of Responsible Care's fundamental objective - to change industry behaviour in ways that secure the trust and confidence of the public. The second obstacle involves the core problems that beset many self-regulatory schemes - namely that they involve regulation of the industry, by the industry, for the industry. In the case of Responsible Care, the .credibility obstacle. will be insurmountable unless mechanisms are put

in place to give the scheme teeth, and to allow for effective government and third party oversight.

While these two issues are closely connected (it would be difficult to rebuild public trust without overcoming the collective action problem), there is some virtue in treating them separately. The next sections of this article address these two central questions.

V. .THE END OF THE BEGINNING.:[22] ASSESSING PHASE I

To assess Responsible Care's effectiveness in terms of addressing the collective action and public credibility issues raised above, we must examine two aspects fundamental to any regulatory scheme, namely monitoring and enforcement mechanisms.

At present, the responsibility for the oversight of Responsible Care lies with an ACIC Board Committee, and with two Responsible Care Co-ordinators taking charge of the scheme's administration. The ACIC's oversight role however, is a modest one which mainly involves issuing self-evaluation forms to participating companies, and following up 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, albeit with advice and guidance from ACIC and the Responsible Care co-ordinators. The Chief Executive Officer 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 (ACIC, 1989: 10), and takes responsibility for all relevant monitoring and assessment measures.

The primary means of encouraging compliance is moral pressure. As the ACIC put it:

> Peer pressure and assessments are an essential part of ensuring that the Responsible Care program gains credibility. ACIC will provide opportunities for

senior executives with responsibility for Responsible Care to meet and compare their experiences (ACIC, 1989: 10).

ACIC will also seek, through informal and formal communications, to persuade recalcitrant companies to meet the targets of Responsible Care . However, if moral pressure from peers 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"(ACIC, 1990 20).

The proponents of Responsible Care emphasise that the scheme is evolutionary and that it involves a continuing process of education, persuasion, and cultural change. Only incrementally can leading edge companies persuade their less enlightened brethren of the virtues of Responsible care, and only gradually can the scheme be given .bite.. Accordingly ACIC's view is that no action to terminate membership could reasonably be taken against any firm until there had been clear evidence of failure to comply built up over a considerable period. At present, it is not possible to know whether ACIC would indeed ever take such action against an offending firm.

Experience in North America, where Responsible Care has been operational for a number of years, suggests that such action is extremely unlikely, there being no documented case of a company's membership being so terminated. This probably reflects the philosophy of the relevant industry associations. As a senior member of the Chemical Industry Association (CIA) has put it "you can't get acceptance just by jamming things down people's throats", and arm twisting is likely to remain a very rare feature of Responsible Care (Posner, 1992: 20).

A more fundamental problem with the monitoring and enforcement of the program is that it is, in its present form, exclusively based on *self*-monitoring and *self*-reporting. Individual companies evaluate their own performance in complying with the codes of practice using mandatory agreed assessment procedures (ACIC, 1990: 11).[23] 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 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 (Rotman 1991a: 33).

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.

As a result of these limitations, Responsible Care (Phase I) will almost certainly fail to overcome either the collective action or the public trust problems identified above. In terms of collective action, there is overwhelming evidence that moral suasion alone will be insufficient to bring about effective self-regulation. With nothing to guarantee or enforce the commitment of firms to the self-regulatory scheme, some firms will inevitably defect, and when they do so, the entire social contract on which the agreement of the majority is based is undermined (see Maitland, 1985: 139). In these circumstances, firms that comply with Responsible Care risk putting themselves at a competitive disadvantage as against those who do not. The free rider problems are overwhelming.

In terms of gaining public acceptance and credibility, Responsible Care is. at present, equally unconvincing. This is again because it lacks effective strategies for monitoring and enforcement. As environmental consultant Joel Hirschhorn comments:

> [Responsible Care] is a step in the right direction, and 10 years ago it would have been impressive. But now everyone [in industry] has the words down right, and that doesn't prove anything. People want to see solid information on performance (Rotman 1991a: 33).

Specifically, what is needed is both methods that better monitor and demonstrate pollution prevention effects and effective third party oversight to ensure that those measurements are genuine and accurate.

VI. PHASE II: STRENGTHENING RESPONSIBLE CARE

Since Responsible Care is still evolving, its present inability to bring about effective self-regulation is not necessarily the end of the story.

Proponents rightly point out that .you have to learn to walk before you can begin to run. and the scheme in its initial phase should not be judged too harshly. Both in North America and in Australia, Responsible Care is now moving into a new phase of development, involving the development of independent performance indicators, third party oversight and direct community involvement. This section describes these developments and assesses their capacity to resolve the collective action and public credibility issues identified above.

A. MEASURING AND MONITORING

The proponents of Responsible Care now recognise that in order to maintain its credibility, Responsible Care needs to devise and implement an effective measuring and monitoring system, capable of validating improved performance. However, this begs the question, what should such a system measure? Even if reports under Responsible Care's existing self-reporting systems are honest and accurate, they can only gauge how well the program is being implemented, not a company's overall environmental performance. As the US Chemical Manufacturers Association (CMA) vice-president, Jon Holtzman points out, such reports "are important to get the [Responsible Care] process in place, but they're not a company by company comparison"(Rotman 1991a: 33). What the community essentially needs is a system capable of validating real improvements.[24]

Moving to evaluate actual performance, rather than just progress in implementing Responsible Care, is a difficult task which requires the generation and collection of objective data that validates a company's activities against milestones that enable all companies to be compared (often known as bench marking). Ideally, this should involve codes of practice that enable a company's performance to be measured in ways that can be understood by local communities, and which are tied to performance objectives that stretch the company's capabilities. So far, only limited progress has been made towards developing and implementing such performance indicators.

In 1992, Union Carbide chief executive officer, Robert Kennedy, commenting on the United States' Responsible Care program summarised the position as follows;

> ... the Responsible Care program has its critics. Among them are those who say it relies too heavily on self-reporting . They have a point. ; Since the inception of Responsible Care program in the United States, we've told the public: 'Don't trust us, track us.' Measure us by our results. Many critics have taken us up on the challenge. They don't like our progress reports - even though we've had some good progress to report. But our 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 systems 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 value of an independent, certifiable reporting system will far exceed the cost and trouble of developing one (Kennedy, 1992).

Steps towards such a system include the United States' toxic release inventory[25] and the environmental index adopted by the French Chemical group Rhone Poulenc. This index can be applied in every plant, and reports combined to produce a measure of the environmental performance of Guardian, 1991: 15).[26] It has now been adopted by the Chemical Industries Association (UK) and France's Union des Industries Chemiques (Paris) as an environmental performance indicator.[27]

In Australia, the ACIC is currently developing a set of performance indicators ranging from emission reduction to local community consultation panels. These indicators are designed to be closely related to the codes in Responsible Care, and to take into account both compliance with the processes set out in the codes, and performance in relation to output and quality of operation.[28] Whether these enable meaningful analysis and comparison, and whether it is even possible to develop a general measure of environmental performance applicable to different firms with different processes and products, remains to be seen.[29] As one critic points out:

> Even if you are counting beans, what do the beans really mean?" For example, emission numbers may decrease because of improvements or lower production (Robinson, 1993: 28-29).

Moreover, even where figures could enable comparisons, companies often resist providing them on the advice of industry lawyers who fear liability entanglements, if numerical evaluations are provided (Hunter and Kiesche, 1992: 10). The extent to which these problems can be overcome, remains unclear, but it seems unlikely that the development of performance

indicators can overcome the problems facing Responsible Care unless there is some form of third party oversight.

B. THIRD PARTY OVERSIGHT

The United States' Responsible Care motto "don't trust us, track us", explicitly recognises what the chemical industry has tacitly acknowledged– that third party oversight is fundamental to the credibility of Responsible Care. [30] Yet the industry has been slow to come to terms with this issue. Surprisingly, leading environmental and community groups have been equally slow to identify the absence of third party oversight as Responsible care's most serious shortcoming, and to consequently express doubts about the credibility of the entire scheme. This section discusses three mechanisms available to facilitate third party involvement in Phase II.

1. Audits/Verification

Many industry insiders have now come to recognise that external verification is the best way "to head off rampant and threatening 'chemophobia' among the general public".[31] As one environmental consultant put it:

> I think the longer the chemical industry puts off creating an auditing system, the worse the scepticism becomes. They have spent time and money and energy building expectations that they can't yet deliver on (Vincent, 1992: 29).

Accordingly, both Canadian and USA industry associates are now taking active steps to move beyond self-policing to obtaining third party confirmation of health, safety and environmental management procedures, and Australia may follow shortly.

Here the lead has been taken by the Canadian Chemical Producers' Association, which is currently testing a "compliance verification system" on volunteer member companies. Under this initiative, a team of four verifiers conduct a verification of a member company's operations. In each case, two of these team members will be people with extensive industry experience, and two will be outside people, one of these being preferably from the company's local community advisory panel.

The team will not conduct an environmental, health or safety audit, but will rather look for evidence of effective management and auditing processes. The verification will start with the question "How do you know Mr Chief Executive Officer, that your company is in compliance with the guiding principles and codes of practice of Responsible Care?" The team will then adapt its verification interviews and visits to follow the management structure identified by the Chief Executive Officer. In particular, they will look for evidence of a management structure, a bench marking process, an internal auditing process, and a mechanism for follow-up and continuous improvement.[32] A report will be given 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 (Wastle 1993).

Some US companies are also in the process of implementing auditing or verification systems. These systems include: one day verification visits to plants by independent industry and community members; consultants overviewing programs; the formation of community advisory panels to examine safety audit results; and the creation of independent assessment teams headed by a credible community representative.

In mid 1993, in the first major change in Responsible Care in five years, the US Chemical Manufacturers Association decided to incorporate a third party verification system into Responsible Care in order to check that companies are implementing the codes of management practice. As from 1995/96, the CMA may require audits and reports as a condition of membership.

Similarly, the Australian chemical industry is beginning to accept third party audits. It is intended that a participating company which indicates that it has achieved compliance with a Code of Practice will be audited by an independent body such as the Standards Association of Australia, or the National Association of Testing Authorities.[33] However, 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 (Smith,

1994a). Clearly, this is a substantial limitation to effective and independent third party oversight and will do little to overcome community scepticism.

Moreover, the present focus on auditing environmental management systems fails to address the crucial question of how far industry itself can be relied upon to provide accurate information, even when systems of certification and performance indicators are in place. For many critics of Responsible Care, nothing less than 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) would satisfy their demand for full accountability (see generally Gunningham & Prest, 1994; Gunningham, 1993).

2. Community Right to Know

Another third party oversight mechanism involves engaging and empowering the community to act as a restraint on the behaviour of the chemical industry. An essential prerequisite for effective community involvement is access to information about the chemical industry's emissions and activities. This the chemical industry acknowledged by its initial adoption (in the USA) of the slogan "don't trust us, track us"[34] which encapsulates 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 is actions rather than by its rhetoric.

The Community Right to Know (CRTK) Code of Practice is the main vehicle used by Responsible Care to achieve this purpose. The Code 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; 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 further Gunningham & Cornwall, 1994).[35]

The potential benefits of CRTK are readily apparent. Right to know gives community groups insights into the severity of the chemical hazards they face, and through this, 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 (see further Gunningham & Cornwall, 1994). With respect specifically to Responsible Care, CRTK in principle, provides the community groups with a capacity to identify the extent to which individual companies are honouring their responsibilities under the other Codes of Practice.[36]

Whether CRTK can deliver such benefits in practice, remains to be seen. At present, the Code is limited in a number of significant respects. In particular:

- it relies entirely on self-reporting and self-regulation. Local community panels are not given any monitoring or auditing powers;[37]
- it does not extend beyond the type of information companies are already required to prepare for licensing or internal management requirements; and
- it does not cover information which is commercially confidential or is a trade secret, or is otherwise protected by the law or a legal obligation to a third party.

These limitations raise serious questions about how the ACIC will police the Code, how far the community can rely upon the ACIC members to supply correct information and about what will happen if ACIC or its members fail to supply certain information. The chemical industry's willingness to implement the principles of Community Right to Know, is explored in section C below.

3. *National Community Advisory Panel*

NCAP is also an important community input to Responsible Care - and another third party oversight mechanism. Made up of a variety of

community activists and independent technical specialists, NCAP has made a major contribution in ensuring that draft proposals are consistent with the public interest goals espoused by Responsible Care. Its most significant role has been in the often substantial modifications it has made to draft Codes of Practice above. Although its 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.

C: ASSESSING PROGRESS: AN INTERIM REPORT

The introduction of performance indicators and third party oversight (particularly the latter) are undoubtedly important developments. They enable the public to make some independent assessment of progress under Responsible Care and, through Community Right to Know and the direct input of local community groups, to gain information about the industry's activities and their environmental impact. These measures will certainly go some way to improve Responsible Care's credibility with the public, though it is too early to say how effective they will be in practice.

Similarly, because the scheme as a whole is still evolving and because independent verification measures have not yet been implemented, it will be some years before its overall performance can be fully evaluated. In the meantime, judging from such limited evidence as is available, the results are, mixed, the limits of moral suasion remain serious and the scheme's ability to transcend short term and individual self- interest, remains in doubt.

The industry associations which administer Responsible care, both in Australia and North America, claim some considerable early successes. In Australia, initial profiles of the first four codes of practice to be implemented (transportation, emergency response, waste management and warehousing and storage) indicated about 40 percent compliance within the first one to two years, with the ACIC predicting full compliance within three years.[38] Performance has also demonstrably improved, if certain indicators are to be relied upon.[39]

In the USA, similar signs of progress are being reported by the Chemical Manufacturers Association. The CMA claims that its members cut

toxic releases by six percent by 1991[40], and emissions generally, by over 29 percent over the five years to 1993. In 1992 CMA also reported an increase of 9.1 percent in the number of plants moving into the top three levels of compliance with the CAER Code of Practices, a 13.5 percent increase with process safety and 15.2 percent with distribution (CMA, 1993). Even the product stewardship code, which in its first year achieved very slow progress, showed dramatic improvement it its second year of operation.[41]

The Canadian Chemical Producers Association, the creator of Responsible Care, makes even stronger claims about the extent to which Responsible Care commitments have so far been met. In 1994, Canadian Chemical Producers' Association President Jean Belanger stated that

> By the end of [1992] about 90 percent of the code elements were in place and by the end of 1993 we were about 96 percent there. 51 percent of our CEOs had signed off on full completion in 1993 while another 9 percent who expected to finish last year haven't yet reported. The final 40 percent ...about 22 companies expect to sign off on the codes this year.[42]

However, these industry-based figures must be treated with caution, given that they are based entirely on self-reporting by the membership without any form of independent verification. In some cases even the categories under which companies are asked to complete self-evaluations are themselves ambiguous and open to flexible interpretation.[43] Finally, industry associations have sometimes been tempted to overstate progress by presenting statistics in a favourable, but not necessarily representative fashion (Tassie, 1993).

By contrast, the limited independent performance indicators that do exist, do not present anything like as optimistic a picture of the chemical industry's environmental performance.[44] Government, public interest groups and local community representatives interviewed for this study were far *less* impressed with Responsible Care's achievements than the industry itself[45] although they were rarely able to adduce more than anecdotal evidence to support their views.

The most commonly cited evidence that Responsible Care was not working well was: first, the fierce opposition of the industry associations responsible for implementing Responsible Care to any kind of government regulation; second, the failure of many individual companies to act in the spirit. of .Community Right to Know.; and finally, the relative ignorance of many small companies, or even middle management of large companies of what Responsible Care required of them.

The large majority of non-industry respondents were of the view that the chemical industry associations, whether in Australia or North America, continue to behave largely as trade associations 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. As one industry observer put it:

> 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 criticised by the membership. It's safer to be conservative.. it also happens when people are representing their firms in industry forums. There's nothing more powerful than peer group pressure. And whatever their private views, its safer to take a lowest common denominator approach.

Most commonly, this takes the form of resisting proposed government regulation, on behalf of their membership. The most recent manifestation of this approach, in the case of the Australian chemical industry, has been the ACIC's concerted resistance to the introduction of Hazardous Workplace Substance Regulations.

It is now over four years since such regulations were first proposed. The regulations are intended to emphasise information disclosure and would require employers to provide standardised Material Safety Data Sheets (MSDS's) to workers, maintain on-site manifests of hazardous substances and label hazardous substances. Government officials and community groups attribute the lack of progress almost entirely to the efforts of ACIC and individual companies in blocking their introduction because they do not

support the release of detailed information concerning the toxic hazards of chemical substances, to the public .[46] .

For example, a central component of the proposed regulation is worker access to information, including a central repository of MSDS information. According to government sources, the ACIC persuaded the Executive Committee of the relevant government agency that provision of MSDS's should be voluntary, but that it would strongly encourage its members to provide the information. It then presented another plan - that the industry would run the proposed (and now voluntary) MSDS repository, themselves. Under this proposal, industry would then distribute the information only to poison control centres, emergency services and to occupational health and safety authorities on a confidential basis. Thus an initiative which was conceived by government as involving "worker right to know" as a central component was subverted by the chemical industry and modified to ensure that the relevant information remained confidential and could not be broadly disseminated. This approach clearly conflicts with the spirit of community right to know, as espoused by Responsible Care itself.

Similarly in the United States, the Chemical Manufacturers Association has consistently opposed government efforts to introduce tighter regulations applying to the chemical industry (see, e.g., Fried, 1992). As one government regulator put it:

> Under SERA Title III and the Clean Air Act, industry had plenty of opportunity to move forward in co-operation with government. Instead, we've had to extract every concession from industry. We've faced total opposition." Indeed, one industry critic (whose views were echoed by others) stated: "the CMA has fought tooth and nail against every new environmental regulation proposed by government.

Crucially, rather than voluntarily adopting (or going beyond) measures contemplated by the Chemical Accident Prevention and the Clean Air Act amendments, the chemical industry has sought to challenge and delay the development of rules under those amendments and thereby delay

their own compliance with those rules for as long as possible. To say the least, this sits uncomfortably with the industry's pledges under Responsible Care and its commitment to continuous improvement. In summary, government and community groups suggest that there are substantial disparities between the chemical industry's rhetoric and the reality of its behaviour, that fundamentally undermine the credibility of Responsible Care.

The behaviour of chemical industry associations in constantly seeking to block environmental regulations, raises serious questions as to whether the association responsible for industry public relations and for advocacy can credibly advance the Responsible Care philosophy. As one government regulator in the USA put it: "Responsible Care is an important initiative but the CMA is absolutely the worst body to implement it." Another 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 organisation 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 (Mark Greenwood, Office of Pollution Prevention and Toxics, Environment Protection Agency, quoted in Begley 1993, p 18).

Perhaps if Responsible Care had developed entirely separate from other aspects of the industry association's activities, the tensions might at least have been reduced. Unfortunately, this has not been the case. Significantly, at the CMA, Responsible Care began life within the Public Relations portfolio, and was removed only when the damaging implications of this became apparent. Similarly in Australia, independent observers suggest that at least for some, Responsible Care was again conceived of as

part of public relations, and that this connection has been extremely difficult to sever with the result that greater attention has been given to resisting regulation than to Responsible Care.

Indeed, as indicated above, the ACIC has often been accused of adopting a lowest common denominator approach whereby it defends the short-term interests of the least progressive element of its membership. Such a stance is quite explicable given the need of an industry association to justify its existence, and indeed, is how industry associations traditionally maintain the loyalty (and justify the fees) of their members.

In summary, there is a substantial tension between the pursuit of the chemical industry's narrower political agenda, and the much broader aspirations of Responsible Care. The evidence suggests that an association committed to the former is unlikely to make substantive progress in achieving the latter.

If we take individual companies' responses to the Community Right to Know code of practice as another index of compliance with Responsible Care, then the results are also, in general, disappointing. In the past, industry, which has access to crucial information about toxic emissions and chemical hazards, has been reluctant to disclose this information voluntarily. Companies often fear that disclosure will enable a competitor to gain an unfair advantage, that public interest groups will sensationalise the information provided or that the public will misunderstand its significance and overreact.

The Community Right to Know Code of Practice (based on a philosophy of full and open disclosure) is intended to transcend the previous restrictive approach, to break down mutual misunderstanding and to establish a new trust and partnership between local communities and industry. However, despite good intentions the old attitudes remain firmly entrenched. A common response of many companies, including some larger corporations, has been, by various means, to resist disclosure.[47] Thus government authorities continue to report difficulties obtaining information about hazardous substances from chemical companies,[48] and the MSDS

saga (discussed above) and other examples[49] suggest little evidence of a change of heart.

Moreover, studies conducted by environmental organisations in a variety of jurisdictions, including Australia, suggest that only a small minority of companies are actually disclosing information consistent with Community Right to Know.[50] For example, a study by Greenpeace in 1994 showed that more than half the sixty three leading chemical industry firms questioned either failed to respond or provided limited details to its environmental performance survey (see Greenpeace, 1994). Similarly, there is evidence that United States companies which are part of Responsible Care, continue "to conceal basic information such as worst case accident scenarios, safety audits, toxic use reduction plans, accident risk reduction plans and economic decisions involving closure of plants" (Adams & Ruchel, 1992: 13).

All this suggests that industry is only very slowly changing its culture and its attitude to public intervention in its affairs. Industry's progress might usefully be charted according to the categorisation developed by Professor Peter Sandman, a leading risk communications consultant and long time observer of Responsible Care (Sandman, 1991). 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 Phase) the industry goes out to educate people about chemicals and chemical risks – in effect trying to teach people they were wrong about the chemical industry. Finally, at stage three (the Dialogue stage) the chemical industry openly acknowledges that it does have problems and faults, and is prepared both to provide full information and to listen (a genuine dialogue) rather than talk at the community. On current experience, the industry is now onto the missionary stage, but occasionally regresses to the stonewall stage. Significantly, as one community representative argued: .if it was a law we could compel disclosure. But because its only a voluntary code we have constant problems getting the information we want..

Moving beyond the specific experience of Community Right to Know, probably the most disturbing aspect of Responsible Care is that perhaps a majority of chemical industry employees, including middle management, who could play a crucial role in implementing Responsible Care, have either never heard of it, or are barely aware of its implications.[51] As one community representative puts it:

> Most small companies in this area are unaware of Responsible Care - it hasn't filtered down to them. But they are very much aware of government regulation and this is what drives them!

If Responsible Care is truly about "a journey of profound cultural change" then it is hard to see how that change can be accomplished until such time as the large majority of company employees can actively engage in it.

Finally, it is doubtful whether the most recent developments (performance indicators and third party oversight) , even if fully and effectively implemented, are enough to overcome the serious collective action problems confronting Responsible Care, by providing the necessary assurance to firms that their competitors will implement their obligations under the scheme. Certainly third party verification of independent performance indicators could enable companies to compare each others' performance, but this in itself will be nothing more than moral suasion, which in the past has manifestly proved insufficient to overcome collective action problems of this magnitude.[52] It is to this way of overcoming this crucial problem to which we now turn.

VII. MAKING RESPONSIBLE CARE WORK

A classic solution to the collective action problem (whether it is framed as a "free-rider" or as a "mutual assurance" problem) is "mutual coercion, mutually agreed upon" (Hardin, 1968: 1247). 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" (Maitland, 1985: 136).

Clearly, Phase I of Responsible Care relies purely on moral suasion. While Phase II goes some way towards independent measurement and verification (which reinforces moral suasion and gives rise to the possibility of shaming recalcitrants into compliance; see further below) it lacks any effective mutual coercion mechanism.

There are a number of possible ways in which .mutual coercion mutually agreed upon. might be adopted, and the collective action problem confronting Responsible Care overcome. They are: self-policing by the industry association; informal social control exercised by industry or its members; and direct State intervention in conjunction with Responsible care (co-regulation).

A. SELF-POLICING BY INDUSTRY ASSOCIATION

For reasons identified earlier, individual business enterprises cannot be relied upon to regulate themselves without some form of oversight. For some, the temptation to pursue short term economic self interest at the cost of environmental considerations is simply too great. In the absence of direct government regulation, the relevant industry associations could appropriately have taken on a regulatory role - in effect, policing the activities of members in complying with Responsible Care. As we have seen, they have not done so, and as a result, Responsible Care demonstrably lacks teeth. In this respect the chemical industry associations are not alone. Very few industry associations have proved capable of seriously enforcing their own industry codes (Lewis, 1991 cf Sigler and Murphy, (1988) (1991)).

There is however, one striking exception which could serve as a model for chemical industry self-policing - the Institute of Nuclear Power Operations (INPO),. INPO is an industry association funded by the electrical utilities that operate nuclear plants in the USA. In contrast to the ACIC ,which merely facilitates companies taking their own monitoring and measurements, INPO acts as a genuine regulator. It undertakes its own inspections of member companies, studying every plant for two weeks on an (approximately) 18 month cycle, and issuing a critical evaluation of each plant's operation coupled with a list of required improvements (see generally Rees, 1994: Chapter 4).

Having conducted inspections and evaluations, INPO faces the difficult task of persuading recalcitrant members to improve their safety performance. To this end, INPO utilises the tactic of corporate shaming to great effect (Braithwaite, 1989). Information for inspections and audits of individual installations is shared with other members and government regulators, so that the poor performance of individual plant operators is widely known. The stigma (and perhaps adverse publicity) which follows from a poor safety record may in itself be sufficient inducement to an operator to improve its safety performance. If not, this pressure is reinforced by the annual three day meeting of all nuclear utility Chief Executive Officers which focuses on safety issues with the specific aim of "pulling the industry together" (see generally Rees, 1994: Chapter 4). Those companies who find themselves at the bottom end of the "safety league table" are left in no doubt that their performance is unacceptable and are subjected to considerable peer pressure to change.[53]

However, in the event that corporate shaming fails and a member still does not improve its safety performance to a satisfactory level over a period of time, then INPO has indicated its preparedness to expel the recalcitrant member. This would be a clear invitation to the government's Nuclear Regulatory Commission to "throw the book" at the company concerned and possibly remove its licence to operate. Thus INPO has the additional leverage of "bargaining in the shadow of the law" to achieve its safety objectives.[54]

In Australia, the ACIC has shown no interest in taking on a similar role to that of INPO, and it is doubtful whether the majority of its member companies would permit it to do so. In the USA, the Chemical Manufacturers Association has examined the INPO model in some detail, but again, has not taken any steps to implement it. The Canadian Chemical Producers Association is even more adamant that it will not be taking on a direct regulatory role. Indeed on one view, put by Canadian Chemical Producers Associations (CCPA) Vice President Brian Wastle, Responsible Care is not really about self-regulation anyway.[55] On the contrary, Wastle sees Responsible Care rather as "ethical commitment and cultural change driven by peer pressure, pride and employee motivation" (Mullin, 1992: 131), a view shared by his Australian colleagues (Smith, 1994a).[56]

The result is that the industry associations responsible for administering Responsible Care lack the ability to enforce it. To many students of self-regulation, this is a fatal flaw. As one study of self-regulatory schemes put it: "the greater the self-regulatory body's power vis a vis a firm, the more likely the firm's acceptance of and compliance with the self-regulatory standards" (Gupta & Lad, 1983: 422). To the extent that the effectiveness of self-regulation depends on the power of the industry self-regulatory body over participating firms, Responsible Care seems doomed to failure.

B. PRIVATE ORDERINGS: SHAMING AND PRODUCT STEWARDSHIP

Even if the chemical industry is unwilling to empower its industry association to police member compliance with Responsible Care, there might still be less formal mechanisms through which the industry association or individual companies might influence the behaviour of fellow firms. Two, in particular, might be invoked in relation to Responsible Care.

First, chemical industry companies or the industry association might seek to .shame. fellow companies into compliance. There is a recent criminological literature that argues persuasively the importance of a moral dimension to corporate (and individual) behaviour, and documents the considerable extent to which corporations can be .shamed. into doing the

right thing (see Braithwaite, 1989), particularly when they can be isolated and the spotlight of public indignation turned on them.

The INPO model, discussed above, provides one example of how such shaming might be involved under a self-regulatory scheme. Certainly the performance indicators and third party verification currently being adopted under Responsible Care, could form the basis for identifying recalcitrants. There is also some anecdotal evidence that to a modest extent, such shaming already takes place, though to what effect is not known.[57]

However, while there may be greater potential to exploit corporate shaming than the proponents of Responsible care have yet realised, it nevertheless has substantial limitations as a mechanism for pressuring recalcitrants into compliance. Specifically, many of the worst offenders in the chemical industry are small players whose corporate image is far less important to them (and thus far less leverage against them) than that of the larger companies with international reputations and goodwill which they are anxious to protect. The capacity to shame such small players into compliance is for the most part, probably very limited[58] .

Accordingly, corporate shaming could only be a partial strategy, and one which, in any case, the chemical industry and its associations have not sought to exploit in any systematic way. A second, and much more promising strategy whereby large companies could exploit their considerable advantages of size and market share to pressure small companies into compliance is to concept of product stewardship.

Product stewardship involves taking responsibility for the health, safety and environmental implications of a product from inception through to final disposition (see further ACIC, 1994: 2). It necessitates co-operation with customers, distributors and contract manufacturers to ensure the product's safe handling after it leaves the plant and embraces not only the activities of manufacturers 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" (Rotman 1991: 30). 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 (ACIC, 1994: 2).

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 (Chenoweth and Jackson 1993: 126).[59]

While the commitment of large companies to the success of Responsible Care might arguably be sufficient to ensure they become effective product stewards, there are also reasons of self-interest why they may choose to do so. Dow Chemical Company, the leaders in this field, have found that their product stewardship program is an important sales tool,[60] and also minimises the possibility of environmental liability, reduces insurance premiums and improves the company's public profile. Finally, there may be opportunities for large firms to provide commercial consulting services and to profit by marketing their services to downstream customers. Thus for large 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.

Importantly, such a strategy can have a substantial effect in controlling the practices of small companies, who are often upstream or downstream suppliers of large chemical companies and who, for reasons identified earlier, may be reluctant to implement Responsible Care voluntarily. Specifically, the environmental practices of small companies can be controlled through a combination of information, customer training, audit, and the leverage which comes with disparities of market power and size. First, large chemical manufacturers can provide the information which many of their suppliers and customers lack. Second, they can educate and train suppliers and their employees on the safe handling, use and disposal of products,[61] share advanced technology on how to minimise the hazards, and provide facilities for recycling or reclaiming hazardous products.[62]

To ensure that suppliers actually implement environmental safeguards, large companies can request information on storage, handling, use and disposal practices, insist on the introduction of appropriate environmental management systems, and oversight the effectiveness of these practices and systems through periodic audit of the supplier's safety and environmental practices. For example, Dow insists on conducting an audit before it agrees to supply a new customer with hazardous material, and routinely audits its distributors. The 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 (Coeyman, 1993: 125).

Many large chemical manufacturers go further and impose specified levels of environmental performance as a condition of contract. They also scrutinise a tenderer's environmental management systems and past environmental record and those factors weigh heavily in deciding to whom to award the contract. In effect, many large chemical companies now choose only to deal with firms that can demonstrate satisfactory environmental performance. As one major chemical producer succinctly put it: "We do not hire the lowest bidder; we hire the carrier least likely to put our products into the Houston Ship Channel" (De Morris 1993: 40).[63]

The leverage which ensures that small companies actually do all that a large chemical manufacturer requires, comes from the dependency which many small companies have on a small number of large trading partners. The larger chemical company implements product stewardship by first advising and assisting customers to improve their environmental performance with a product, while making clear that if minimum requirements are not met within a reasonable time then sales will be suspended until customer practices improve, and "ultimately the customer will be dropped" (Coeyman 1993: 37, 125).

Given the reluctance of small companies, constrained by lack of cash, staff and expertise, to comply voluntarily, this leverage which large companies can commonly exert over small suppliers and 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 - it is the only Code capable of inducing non-participants or reluctant participants to comply with its goals. For this reason, many industry figures argue that the Code is likely to be substantially more effective than any legislation could be in ensuring that companies dedicate time and resources to health, safety and environmental concerns.

Yet despite its central role, Product Stewardship is far harder to test, measure or pin down, than any of the other Codes of Practice. As the Chemical Manufacturers Association acknowledges:

> As far as 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 measurement] 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 (Begley 1991: 17).

In time, self-evaluations may shed further light on how effectively Product Stewardship is being implemented. However, for reasons discussed above, it will be necessary for these self-evaluations to be both accessible to the public and subject to third party audit if they are to have credibility,[64] 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 (Coeyman 1993, 1993a, 1993b) Firstly, extending it backwards towards upstream suppliers (Begley 1992: 74) and maintaining control once the product has passed beyond the first point of sale (Chenoweth and Heller 1992 p28) are proving to be extremely 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 (Begley 1992a: 68). Sometimes, where competition is fierce, a large firm will be most reluctant to sever relations with a small supplier who provides a product at a very good price, but is unwilling to comply with product stewardship, unless it is confident that its competitors are applying the same policy (the problem of .mutual assurance. again). Secondly, the code's emphasis on disclosing knowledge

of how a company's products are actually used, is meeting resistance from those who fear it may intrude on a customer's proprietary information (Begley 1992a: 68). Finally, beyond enlightened self-interest, there is nothing to induce large companies to adopt product stewardship programs, since they are immune from the sorts of pressures that can be brought to bear on their smaller counterparts.[65]

C. GOVERNMENT INTERVENTION: A ROLE FOR CO-REGULATION

We have seen that the collective action problems confronting Responsible Care are unlikely to be resolved under Phase II of the scheme, that the industry associations do not intend to take on a direct regulatory role, and that private orderings, while potentially valuable, are as yet largely untried, and also have substantial limitations.

If there is to be effective .mutual coercion. to support the self-regulatory framework of Responsible Care, to overcome its collective action problems and to re-establish public trust, then it must come from outside of the scheme itself. There is no viable alternative to direct government intervention to fulfil this role. However, such intervention is unlikely to be "mutually agreed upon." For while the chemical industry and its associations pay lip service to "co-regulation" by industry and government[66] in practice, as indicated above, it almost invariably opposes any government constraints on its behaviour.

In principle, this might seem surprising. If the voluntary compliance of the majority of firms depends upon the coercive imposition of a code of conduct on free riders, and a degree of government intervention seems to be the only viable way of achieving this, then how could those who are genuinely committed to the success of Responsible Care possibly object?[67]

The most convincing answer is that private enterprise has a strong ideological opposition to greater government intervention in its affairs and nowhere is this stronger than in the case of the chemical industry. Moreover, the industry fears that since government has its foot in the door, there is no ready way of limiting the degree or type of intrusion. Since government regulation is generally perceived by industry to be rigid,

inflexible, over-prescriptive and unnecessarily costly, it is most unlikely that large companies would voluntarily go down this path.

Nevertheless, from a public policy perspective, (in terms of achieving improved environmental performance of the chemical industry) where the industry association is unwilling or unable to regulate its members' behaviour directly (as with Responsible Care), and self-regulation becomes essentially the responsibility of individual member companies, then the case for government oversight and for co-regulation is overwhelming.[68] .

Specifically, government intervention is 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 behaviour of recalcitrants, to regulate the behaviour of those who refuse to participate in the self-regulatory scheme, and to intervene directly where the gap between industry self-interest and the public interest is too large for self-regulation alone to be a credible strategy.

Co-regulation in this context 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 standards would continue to be set by government and government would reserve the right to impose legal sanctions for breach where the self-regulatory scheme fails to live up to its promises. However, the day to day administration of these standards would be the responsibility of industry subject to government oversight and periodic monitoring.

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 (which in the case of Responsible Care includes substantial numbers of smaller operators). It must ensure that non-participating companies are subjected to standards at least as tough as those adopted by participating companies, so that the former do not gain a short term competitive advantage by refusing to join the self-regulatory program.[69]

One means of achieving effective co-regulation in respect of Responsible Care would be through a combination of statutory general duties[70] and performance standards[71] complemented by codes of practice.

The general duties and performance standards would prescribe minimum acceptable environmental outcomes which both companies participating in Responsible Care and non-participants would be obliged to comply with. This would ensure that self-regulation was not used as a mechanism to escape statutory responsibilities that would otherwise apply.

The codes of practice would provide practical guidance as to how to achieve compliance with the general duties and performance standards. Codes of practice 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 organisations 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.

The attraction of this system 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 achieve the general duties and performance standards set by government, and are allowed to devise their own internal regulatory mechanisms best suited to achieve those ends. This has the considerable virtue of encouraging more cost-effective and innovative industry responses than under traditional direct "command and control" regulation.[72]

Thus, for companies which are part of Responsible Care, 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,[73] and of the proposed third party audits. The latter would be a crucial independent indicator of whether the Codes are indeed being complied with by individual operators. Government would also take account of complaints against Responsible Care members and of community consultative mechanisms in determining whether self-regulation was working satisfactorily.[74]

Regular inspection of companies subscribing to Responsible Care would be discontinued, leaving government free to redeploy its scarce regulatory resources and focus on these companies (often the worst polluters) who have refused to join Responsible Care. Government would continue to regulate these companies directly, through regular inspections, reinforced by administrative measures and criminal prosecution (see further Fisher, 1993: Chapter Nine).

The co-regulation scheme proposed is largely consistent with John Braithwaite's model of "enforced self-regulation", (see Braithwaite 1982: 1470-1471) :

> Under enforced self-regulation, the government would compel each company to write a set of rules tailored to the unique set of contingencies facing that firm. A regulatory agency would either approve those rules or send them back for revision if they were insufficiently stringent. At this stage in the process, citizens' groups and other interested parties would be encouraged to comment on the proposed rules. Rather than having government inspectors enforce the rules, most enforcement duties and costs would be internalised by the company, which would be required to establish its own inspectorial group. The primary function of governmental inspectors would be to ensure the independence of its internal compliance group and to audit its efficiency and toughness.....

In this model, governmental involvement would not be limited to monitoring. Violations of the privately written and publicly ratified rules would be punishable by law.

It will be apparent that the proposed co-regulatory model, while distinct from Braithwaite's model, has many similarities to it. For example, it relies on government to endorse industry codes of practice where appropriate (as distinct from rules tailored to each firm). It conceives of each firm enforcing those codes (this being one of the roles of the Responsible Care co-ordinator in each firm) with government overseeing the effectiveness and independence of this process. Although Braithwaite's proposal of an internal inspectoral group goes beyond the present conception of Responsible Care, it might nevertheless be regarded as a logical extension of it.

The co-regulation model similarly has many of the benefits that Braithwaite claims for enforced self-regulation: Responsible Care co-ordinators are insiders, employees of the corporation, and would accordingly have access to sources of information currently denied to outside inspectors. They have a degree of specialist technical knowledge that government regulators, being generalists, usually lack, and are less likely to meet hostility and resistance from fellow employees when they seek to implement the codes of practice. Each company bears the costs of self-regulation, allowing government regulatory agencies to spend more of their time targeting the worst offenders outside of Responsible Care. Finally, rules/codes drawn up by industry are likely to be more cost-effective and appropriate to industry conditions than government regulations. The fact that those codes would be subjected to community scrutiny through the National Community Advisory Council, as well as to government approval, serves to mitigate the fear that they may be self-serving and fail effectively to protect the public interest.

Co-regulatory schemes also have their weaknesses. There is a danger that the regulatory process becomes co-opted by business, that rules in part written by the industry (although endorsed by government) may seek to evade the spirit of the law, and that the Responsible Care co-ordinators will not be sufficiently independent. However, these weaknesses may be largely overcome through use of the other necessary mechanisms (performance indicators, third party audit[75], community right to know other forms of

community input and government oversight) (see, e.g., Gunningham & Prest, 1994: 520-525).[76]

Finally, effective co-regulation must involve a willingness on the part of government to take tough measures if industry betrays the trust that has been placed in it to regulate itself. That is, a compliance strategy must be complemented with an appropriate deterrence strategy.[77] Without this, some elements of industry will undoubtedly be tempted to pull the wool over government's eyes, and to opt for short-term economic self-interest, at the cost of their environmental responsibilities.[78]

In summary, Responsible Care cannot succeed in the absence of some agent of coercion, and it is unlikely that industry members will grant coercive powers to their own representative body. Private orderings such as corporate .shaming. and programs of product stewardship, may induce some companies to voluntarily improve environmental performance, but the compliance of financially challenged or stubbornly free-riding corporations cannot be guaranteed, and thus the .assurance. problem remains. For these reasons, it seems that Responsible Care has a limited chance of success as a purely self-regulatory scheme. However, if the scheme draws upon the combined powers of the industry, government and the community, then the potential exists to solve the assurance problem, induce more comprehensive compliance, and thus to reassure the public of the scheme's integrity. Specifically, co-regulation, complemented by a variety of third party oversight mechanisms, is the best chance we have of overcoming the collective action problems, of making Responsible Care effective, and of sustaining public trust.

VIII. CONCLUSION

What are the broader lessons to be learnt from Responsible Care? In particular, what are the essential prerequisites for self-regulation to function as an effective agent of public policy? What is the most appropriate relationship between self-regulation and government regulation? To what extent should self regulation be seen as a part of a broader regulatory mix, and how can we achieve an appropriate balance of government, community and industry involvement?

A THE LIMITS OF SELF-REGULATION

Self regulatory schemes can be located on a continuum. At one extreme are those schemes which are most unlikely to work under any circumstances and which are largely a sham (symbolic self-regulation). Towards the centre are those schemes that might work, but only in conjunction with various types of external oversight (co-regulation). At the other extreme are those arrangements which work well and contribute effectively to the public interest with little or no outside intervention (pure self-regulation).

The large majority of documented cases of self-regulation fall in the first category. These cases are better viewed as an attempt to placate the public and to keep government regulators at bay than as a genuine strategy to achieve broader public interest goals. They are "no more than a form of placebo policy ... designed mainly for their cosmetic effects ... a useful way of organising issues out of politics ... a wicked weapon of agenda management" (Baggot, 1989: 45; see further Richardson & Moon, 1984: 29-37; Stringer & Richardson, : 23-39).

Cases of failed or symbolic self-regulation are easily explained, well documented, and for present purposes, of little interest. Far more complex and challenging to explain are the very limited number of cases in which self-regulation, either alone or in conjunction with various oversight mechanisms, makes an effective contribution to social policy goals.

Perhaps the best documented example is Joe Rees' study of the nuclear power industry in the USA, and of the Institute of Nuclear Power Operators (INPO), discussed above. Rees (1994) demonstrates that the nuclear power industry has a number of characteristics that make it particularly conducive to effective self-regulation. In particular, it consists of a limited number of large operators, each with a very substantial investment and a considerable stake in the long term viability of the industry as a whole. Because of the sensational and enormously destructive consequences of a major nuclear explosion, all the operators realise that they will suffer disastrous consequences - including possibly a closure of

the entire industry in a political backlash - if any one of their members is responsible for such a disaster. As one of Rees' respondents put it:

> The industry realised after Three Mile Island, and it was reinforced by Chernobyl, that we stand or fall together. So even if you have problems with INPO on this or that issue, you really do want INPO to do a good job. I mean, INPO needs to do a good job in watching those other guys so they don't ruin it for me and everybody else. That's what TMI did. One plant ruined it for everybody. (Rees, 1994: Ch 4)

The result is that each nuclear power operator acts as its brother's keeper, acutely mindful that the industry is only as strong as its weakest link. As Rees demonstrates, this unusual and happy coincidence between private and public interests spawned a self-regulatory system that is apparently very effective in achieving both private and public goals relating to nuclear safety. Collective action problems are minimised because each of the limited number of players clearly recognises that there is a "community of shared fate" and for reasons of self-interest, has willingly acquiesced in a self-regulatory structure capable of delivering "mutual assurance."

At first sight, the chemical industry might appear to have many of the same features as the nuclear power industry: a limited number of large players and a community of shared fate formed by the risk of highly visible large scale disasters that would damage not just the individual company concerned, but the entire industry. However, the chemical industry has a number of other features which make effective self-regulation far more problematic than it is in the case of nuclear power. In the chemical industry, there are not only a limited number of large players but also many medium or small players, not all of whom perceive themselves as having the same interests in terms of improved environmental performance. Some of these firms are not participants in Responsible Care at all and some are so economically marginal that they will be most reluctant to sacrifice short term profit for the sake of long term credibility and viability of the industry. Moreover, since some of these firms do not deal directly with the public and have no public image to protect, their reputation is of lesser importance, and a major explosion elsewhere in the industry would not, at least in the short term, damage them directly (though in the longer term they too would suffer in a regulatory backlash).

Even large companies (the driving force behind Responsible care) are not unanimous in their support of the scheme. The connection between a firm's own behaviour, that of its competitors, and the ultimate fate of the chemical industry, is less starkly obvious than in the case of the nuclear industry. As a result, there is considerable room for disagreement between companies as to the need for, and necessary scope of self-regulation. For example, the most pro-active responsible firms are likely to take a very different approach to more reactive enterprises, many of whom traditionally resist any form of intervention in their affairs, from whatever source (Winsemius and Guntram 1992,p17).[79]

In the mid to late 1980s, the former group largely held sway, their case reinforced by the recent and vivid image of Bhopal, damning public opinion polls of the industry's environmental performance, and the strident demands of environmental groups for tougher regulation of the industry. Responsible Care, conceived largely as a result of their efforts, was primarily an attempt to improve the industry's environmental performance rather than merely as public relations (though it was always that too).

Today, although the spectre of Bhopal still stalks the chemical industry, its impact is fading. More importantly, a major recession has inflicted substantial damage on the industry's profits, and environmental groups have far less influence as the economy takes centre stage in national politics and policy-making. There is impressionistic evidence that commitment to Responsible Care is weakening,[80] and that any aspects of the scheme which are likely to damage short-term industry profits now meet with substantial opposition, even from many major enterprises. There is also evidence of a slippage from genuine commitment to improved environmental performance, to seeking financially painless public relations benefits.

This diminishing support for the scheme might not be so important if the original structures of Responsible Care were sufficiently strong to deter potential defectors from withdrawing their commitment. Unfortunately, as we have seen, they are not. For example, whereas INPO was set up as a separate and independent body specifically to regulate the safety of its members, Responsible Care has simply been added to the functions of

existing industry associations with competing agendas and all that that entails (above: Pt VI C). Again, whereas INPO was given independent inspection and enforcement powers, no equivalent powers have been provided under Responsible Care (above: Pt VII A).

These weaknesses are themselves indications of the severity of the collective action dilemmas confronting Responsible Care. Whilst a tougher oversight, inspection and enforcement structure would clearly enhance both the effectiveness and the credibility of Responsible Care, it would be unacceptable to at least a substantial (and growing) minority of the membership. Indeed, the tougher Responsible Care becomes, the more companies are likely to opt out of the scheme altogether. Thus a basic dilemma is whether to move towards a lowest common denominator approach in order to maintain membership numbers or to move towards tougher standards, and lose a substantial part of the membership. Neither outcome suggests much hope of Responsible Care achieving credible and effective self-regulation.

In summary, the experience of Responsible Care suggest that the scope for effective self-regulation, at least in its pure form, is extremely limited, and that it can only operate successfully under very narrowly defined circumstances. Specifically, it is only where there is a substantial overlap between public interest and private interest, the players involved are small in number, and they are united by a strongly perceived community of shared fate, that they will be willing to agree to effective mutual coercion thorough self-regulation. Rees' (1994) study of INPO represents one of the very rare cases where these conditions are satisfied.[81] In larger groups, with more diffuse interests and less certain gains from collective action, the prospects for successful "pure" self regulation are very poor indeed.

B CO-REGULATION AND THE REGULATORY MIX

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. For despite its flaws, Responsible Care has some considerable

virtues, and remains one of the most sophisticated and advanced self-regulatory schemes yet developed.

The codes of practice, by comparison with most other such schemes, are both detailed and far-reaching in their effects. There is some genuine coincidence between the self-interest of the industry in securing its long term future, and the public interest in environmental protection, and many large and influential companies would indeed wish the scheme to succeed. There have also been genuine attempts, however qualified the results so far, to involve the community directly in the scheme. Finally, it has the traditional virtues which self-regulation claims over command and control regulation: flexibility, lower costs, and the capacity to encourage cost-effective industry responses.

For all these reasons, Responsible Care, as a tool of social policy, should be nourished rather than neglected Yet its basic structures have turned out to be so seriously flawed, that is cannot work effectively as a .stand alone. self-regulatory arrangement. Is this a reason for pessimism about its potential contribution or can means be found to capitalise on its strengths and to overcome its weaknesses?.

One of the most important lessons to be learnt from the history of social regulation is that no single policy instrument in isolation is likely to deliver good results, and that the optimal regulatory strategy is likely to be multifaceted, involving a mix of instruments best suited for specific organisational contexts (see Coad, 1988: 42, Gunningham 1993a). No universally appropriate formula is available and the appropriate measures must be tailored to individual circumstances.

In the case of Responsible Care, an optimal strategy would seek to harness the considerable advantages of an existing and highly developed self-regulatory regime while overcoming its collective action and other weaknesses by superimposing a degree of government and third party oversight and intervention in the manner detailed above. Thus an optimal scheme is tripartite, seeking to involve both governments and third parties as part of a broader framework of public accountability (Ayres & Braithwaite, 1993).

Third party oversight mechanisms are already in the process of being developed. They include independent environmental audits and verification procedures, the role of the National Community Advisory Panel in scrutinising draft codes and other proposals, the developing contribution of regional community groups and, crucially, access to information through the Community Right to Know Code of Practice. While the latter could be considerably strengthened if it was underpinned by government regulation (see Gunningham and Cornwall, 1994), and by extending third party standing to bring court proceedings (Fisher, 1993), nevertheless in general, the appropriate third party mechanisms are already "on track."

What is so far substantially lacking is the development of any genuine co-regulatory arrangements along the lines indicated in section VII C above. This is due in no small part to the attitudes and actions of the chemical industry. Indeed, if Responsible Care is to be successful in future, it is the industry itself that must make two major changes of direction.

First, the administration of Responsible Care must be severed from its connection with the industry associations. The present structure gives rise to almost overwhelming tensions between the broader goals of Responsible Care and the narrower lobbying activities of those associations (above: Pt VI C). Separate and independent administration is a necessary prerequisite for Responsible Care to become a mechanism for environmental protection rather than merely for public relations.

Second, the industry must let go of its strong ideological aversion to any form of government intervention in its affairs and be willing to work cooperatively with government to develop co-regulatory arrangements that in the long term, may well be in the best interests of the industry as well as the public.

Neither of these changes are likely to be easy to implement. Particularly in the United States, where the adversary relationship between business and government is deeply entrenched (see Vogel, 1986) the prospects for co-regulation are not promising. However, in Australia, where a more co-operative relationship exists between the regulators and the regulated, co-regulation is undoubtedly a viable proposition. The

establishment of an "accredited licensing" scheme in 1994 in Victoria is a graphic demonstration of how the more far-sighted sections of business and government, working together, can develop innovative regulatory strategies in their mutual best interests (Environment Protection Authority 1993).

If the chemical industry does not grasp such opportunities to work co-operatively with government, and to transform Responsible Care into a genuine co-regulatory scheme, then its prospects are dim. On the analysis presented in this paper, the scheme is unlikely to substantially improve the environmental performance of the chemical industry, or to regain the trust of the public in the industry's integrity. Such an outcome would be neither in the best interests of the environment nor in those of the chemical industry itself.

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* This is a project supported by a grant from the Australian Criminology Research Council. The views expressed are the responsibility of the author and are not necessarily those of the Council. The author gratefully acknowledges the research assistance of Sophie Dawson, Rachel Pepper and Marian Moss.

1 For present purposes, industry self-regulation may be defined as a regulatory process whereby an industry-level (as opposed to a governmental or firm-level) organisation sets rules and standards (codes of practice) relating to the conduct of firms in the industry. This definition implies that industry self-regulation requires firms in the industry to decide to cooperate with each other.

2 Agenda 21 is the major detailed policy document to emerge from UNCED. Its core chapter as it relates to business was strongly influenced by the recommendations of the Business Council for Sustainable Development - an extremely influential body comprising forty - eight top executives from leading transnational corporations (see Schmidheiny Changing Courses MIT Press, Cambridge, Massachusetts, 1992).

3 The empirical work involved semi-structured interviews with over 40 industry participants, self regulators, government regulators and community representatives in Australia and about a third of that number in the United States. Public documents,

industry journals and reports were also relied upon to supplement data gathered elsewhere. I was granted interviews by all the main actors without exception.

[4] Although David Vogel (1986) rightly alerts us to possible cultural differences between regulatory agencies in different countries, it may nevertheless be that "certain policy areas are more conducive to private interest government solutions than others" (Jacek, 1991: 148). Indeed, there is considerable evidence that countries can learn from one another in this regard (see K Dyson and S Wilks, 1983: 261). Having conducted interviews not only in Australia but the United States, 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 than they are to Australia. Indeed, the many similar structural characteristics which that the analysis is relevant to both countries.

[5] Figures based on the EPA's Acute Hazardous Substances Data Base.

[6] The then Minister for Labor charged that some storage practices of western suburbs chemical plants were "akin to criminal neglect". This followed department raids in May which found that 45 out of 50 warehouses had breached safety regulations. Most factories did not have proper firefighting equipment or clearly marked emergency exits.

[7] This was acknowledged by Australian Chemical Industry Council Chief Executive, Frank Phillips, who said that the plan was developed in response to the industry's poor public image (see Smithers 1989).

[8] As Canadian Chemical Producers Association President Jean Belanger put it: "if we could figure out a way of becoming proactive, then we could lessen demands for that degree of regulation" see Mullin (1992).

[9] On a smaller scale the American Nuclear Industry's self regulatory scheme goes even further (see J Rees, 1994).

[10] The Australian chemical industry has a turnover of approximately twenty-one billion dollars a year. Industrial chemicals account for about eight billion dollars, plastics and rubber products eight billion dollars, farm chemicals two billion dollars, soaps and detergents two billion dollars and paints one billion dollars. At the time of writing, the plastics and chemicals industry association and the farm chemicals sector are examining the possibility of also joining Responsible Care . Since the merger of the main plastics

and chemical industry associations only took place after this research was substantially completed, its implications are not addressed.

[11] The Australian Chemical Specialty Manufacturers Association (ACSMA), representing soaps and detergents producers and the Chemical Importers and Exporters Council of Australia (CIECA), which are both, in volume terms, very small players, also joined the Responsible Care Program but have since withdrawn.

[12] For example in Australia a relatively small number of firms import twenty thousand toxic and hazardous chemicals annually (only three point four percent being manufactured domestically) and thereby control the feedstocks or imports to those processors which produce hazardous wastes (see PIAC, 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 (J Smith, 1994a).

[13] 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. For example, a 1990 survey by Worksafe Australia indicated a chemical industry figure of 9.4 recordable injuries per 1000 employees compared to 46.2 in the manufacturing industry and 27.2 in industry overall (see further Genn, 1985).

[14] In the European Union, the chemical industry's spending on environment has doubled over the last ten years. In 1990 Monsanto promised to reduce the annual 20 million pounds of toxic emissions by 90% over four years, BP Chemicals has undertaken to spend $US 100 million s year over five years cutting waste emissions, ICI (UK) has made a commitment to halve emissions over a similar period. Du Pont, Union Carbide, Exxon, Hoechst are amongst those who have also committed themselves to spending substantial sums in improving environmental performance in ways that are consistent with their commitments under Responsible Care.

[15] Of course, some commitment to environmental priorities will have short term pay-offs. Improvements in waste reduction, in good housekeeping, in saving energy, in eliminating excessive packaging, even in alternative materials purchase, will feed back directly into corporate profits - though while the first 25 percent improvement may be quite easily achieved, the next 25 percent may prove far more challenging (see Gunningham, 1994).

[16] Robert Jackall (1988) found that short term issues overwhelm long term considerations: In Jackall's view "Managers 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". (1988: 84). Jackall also found that staff mobility, both within and between corporations (often the result of CEO-inspired reorganisations), 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 Environmental Protection Agency, 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. As Jackall observes, "Whoever is currently and directly in charge of an area is responsible - that is, potentially blamable - for whatever goes wrong there, even if he has inherited others' mistakes" (1988: 87).

[17] The dichotomy is not invariably appropriate. For example, some small enterprises, particularly those operating in niche markets, have considerable sophistication, 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.

[18] Large firms in imperfect product and geographic markets often have considerable market power. Oligopolies, barriers to entry and the other market imperfections serve to buffer certain enterprises from the pressures of competition and permit them to pursue long term strategies other than the maximisation of profits.

[19] Reverse engineering would ultimately yield the same information that small companies seek to keep confidential, but full disclosure to the public would make it far easier for competitors to access this information. Disclosing chemical formulations might also reveal that many specialty manufacturers are charging a high price yet using very inexpensive raw materials.

[20] The logic Underlying Olson's theory of collective action is identical to that of an n-person prisoners' dilemma (see Hardin, 1971: 472-479). Note, however, that in a continuing series of two player games, the best strategy is .tit-for-tat.. i.e. to co-operate in the first game, and to do whatever the other player did last time, from then on :see Schotz (1984) and Ayres and Braithwaite, (1993) Responsible Care, in its present form (relying solely

on moral succession without sanctions) lacks the characteristics of a continuing series game.

[21] My overall description of game theory is indebted to Maitland. It should be noted that the most realistic version of the .assurance problem. allows for the likelihood that .while most firms may be disposed to comply with the code, some number of opportunist firms will choose to defect. (Maitland, 1985: 138).

[22] This phrase is borrowed from Jean Belanger (1994).

[23] ACIC now asserts that a system of validation of these procedures will be developed but without any stated time-frame.

[24] In part, external verification might be achieved through an environmental management standard, involving certification that a company had created management systems capable of delivering conformity with the Responsible Care codes. One specific way of developing environmental management systems, accreditation and audit would be to modify the International Organisation for Standardisation (ISO Geneva) ISO 9000 quality standard, thereby creating a separate environment management standard. Work in this direction is currently proceeding (Kirschner, Chenoweth and Tatum 1992, p28-29), and a parallel British standard (BS 7750) is already in place. In the UK, the Chemical Industry Association guidelines on certification of Responsible Care programs already comply with the European Union's (.EU's.) voluntary eco-audit proposal, which is based on EN 2900 - the EU equivalent of ISO 9000. Under the guidelines, the audit will show companies have a management system in place to continually improve health, safety and environmental performance. In the future, the audit may be expanded to provide a rating performance, along the lines of the International Safety and Reliability System/Standard.

[25] See *Emergency Planning and Community Right to Know Act* 1986, which provides access to environmental performance data concerning individual facilities, which data can be aggregated by company, by industry and by classification. Current legislative trends in the USA are towards extending the list of chemicals and hazardous materials to be reported, requiring additional performance reporting in toxic issue reduction, and introducing manufacturing "eco efficiency" reporting such as kilos of pollutant released per kilo of product.

[26] Each plant has it own index, relevant to its owns situation, reporting monthly as part of management reporting procedures. But all the indices can be combined to produce an index for each company, country, division, and for the whole group. In the UK based on this index the Chemical Industries Association has developed six measures that all members' sites will have to report annually: environmental spending in pounds sterling; lost-time accident statistics for a company's own employees and contractors; quantities of red list, or toxic, chemicals discharged in kilograms, amount of special or hazardous waste disposed of in mt, and an environmental index based on five key site pollutants; distribution incidents per million mt of product transported; total on-site energy consumption in giga-joules; and all complaints. (Chenoweth 1993, p128). See also the discussion of the ISO 9000 standard below.

[27] In the USA, the Chemical Manufacturers Association has called for performance measurements from members for each of the codes, to be used in pilot tests in 1994. As Chemical Week (July 14 1993, 28) has pointed out, members are already required to report some results. Figures for the SARA Title III Toxics Release Inventory must be submitted each year under the pollution prevention code. The Occupational Health and Safety Act reports requirements in respect of employee illness and injuries provide a gauge for the employee health and safety code. One possible measurement tool for the distribution code is the US Department of Transportation's interstate hazardous materials incident database, with additions to include intrastate reports.

[28] At the time of writing, a community-industry workgroup had identified 37 parameters covering health, safety, environment, transportation, product use and company openness, and 11 priority areas that are useful for the community, useful to ACIC companies, amenable to international comparisons, contain hard measurable data and are consistent with Responsible Care initiatives. These proposed indicators are currently under review by the National Community Advisory Panel (see further Smith, 1994).

[29] Here, key questions are: what comparisons can be made with data on incidents and impacts of chemical operations and substances; or whom should data be gathered; and what health, safety and environment outcomes should we measure? (see further Smith, 1994).

[30] That slogan turned out to be a public relations disaster (surveys indicated that most Americans remembered only the first part of it) and the ACIC has wisely chosen not to adopt it.

[31] This view has been attributed to US Chemical Manufacturers Association executive J Davenport.

[32] Four verifiers, including two industrial 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 ensure Responsible Care requirements are met. The team was able to examine twenty percent of the one hundred and fifty one items in depth, quickly checking the others Kirschner, 1993a).

[33] Using professional associations may serve to overcome a serious problem with environmental auditing in Australia, namely that there is only a limited pool of auditors, that this pool is dependent on the private sector for the large majority of its work, and that no professional accreditation standards exist (see further Gunningham,1993: 229–238).

[34] That slogan turned out to be a public relations disaster (surveys indicated that most Americans remembered only the first part of it) and the ACIC has wisely chosen not to adopt it.

[35] In the USA, the principle of community right to know is embodied in the Emergency Planning and Community Right to Know Act 1986. No similar legislation exists in Australia.

[36] For example, the intention is that member companies will be able to measure performance quantitatively against defined objectives (see Code, section 2.1 and implementation principles).

[37] Significantly, one recommendation of the National Community Advisory Panel that was not embodied in the Code, was that chemical companies, in conjunction with community consultative mechanisms, monitor and audit processes to assess safety systems, public health effects and environmental effects.

[38] Forster (1993), p 143.

[39] For example, in 1993, ACIC claimed that lost time injury frequency had decreased 30 percent in three years and that transport accident frequency was also down about the same amount (Smith, 1994).

[40] As evidenced by reports mandated under the Toxic Release Inventory. However, projections by industry show waste generation will stay flat or increase over the next few years, that recycling will decline and that quantities of toxic chemicals being treated will rise .See Begley (1992), p 60.

[41] The 1993 Product Stewardship self-evaluations showed a mighty sixty percent increase in companies reporting implementation at Levels Four (action plan), Five (Management Practice) and Six (Practice Implementation). (see CMA, 1994).

[42] (Belanger 1994 p3)

[43] For example, companies are asked if they have an employee trained in Responsible Care. More than fifty percent say they have done so. Yet given that no appropriate training course exists in Australia, it is difficult to know what a company would need to do to meet this requirement. Indeed, a number of industry-based respondents interviewed for this study expressed serious misgivings about how to measure compliance with Responsible Care, and as to the value of the self-evaluation process.

[44] For example, the first figures published under the US Government's mandatory Toxic Release Inventory (TRI) 1991, were generally perceived by non-industry observers as "a grave disappointment", and did not reflect an anticipated improvement (see Begley (1993), p 18).

[45] Most, indeed, were extremely sceptical of the current claims of progress being made by the industry associations. Even under the TRI, experience shows that toxic use and emission reductions can be more apparent than real. Specifically, some industries have resorted to a variety of strategies to disguise their failure while ostensibly to achieve effective toxic use reduction, reducing emission and parading their credentials as good corporate citizens (see for example Page and Horowitz, 1992).

[46] Individual chemical companies have taken a strong line in refusing to divulge relevant information which they already possess, on the basis(1) that this information was very expensive to generate, and should not be given away free, (2) that it will be misunderstood by the community and possibly result in an (unjustified) community backlash against the

industry, and (3) (in some cases) that they would suffer a competitive disadvantage if such information could be accessed by competitors.

47 See for example *Ciba Geigy v Worksafe Australia, Administrative Appeals Tribunal* at 22. Ciba Geigy were prepared to spend hundreds of thousands of dollars on challenging a Worksafe Australia decision before the Administrative Appeals Tribunal, rather than comply with a regulatory requirement to disclose information. Strikingly, the company was prepared to argue that results provided to government authorities by their own Head of Quality Assurance should be discounted on the basis that these tests were not properly conducted and that the Australian subsidiary had not been provided with adequate information by Head Office. The company argued that, contrary to the results disclosed to the government, the chemical in question was not toxic and therefore that a warning label to that effect was not required. The appeal failed.

48 As one recent report in Victoria pointed out, the level of compliance with reporting requirements under existing chemical regulations in that State is very poor (Adams & Ruchel, 1992). If laws about maintaining chemicals information are not complied with, arguably a voluntary code has little hope.

49 According to government sources, in 1994, the common industry response to a suggestion that a list of potential carcinogens (a factual statement) be released was: "what if Greenpeace get hold of them!"

50 For example, one study in the UK found only six major companies willing to provide information voluntarily on toxic emissions, with a further 19 companies refusing to provide details (Friends of the Earth, 1992; see also Bloustein, Davis, Milne & Munn, 1992). In the USA the Public Interest Research Group (PIRG) conducted a survey of CMA member plants in March 1992. PIRG reports that only nineteen of the one hundred and ninety-two facilities "gave an answer to each of the nine questions and seems to understand the spirit of 'Responsible Care'" (PIRG, 1992).

51 CMA's 1992 public opinion survey indicates that only about 60 percent of industry employees say that they are "somewhat aware" of Responsible Care, with less than 40 percent claiming to be fully familiar (see Hunter and Mullen, 1992, p 22). Anecdotal evidence gleaned from interviews for this study, suggests that a similar situation exists in Australia.

[52] For example, moral suasion also formed the basis for environmental responsibility under the maquila program, introduced by United States' President Johnson and Mexican President Dias in the 1960s. This program created special trade zones within which raw materials or product components could be imported duty-free into Mexico, transformed into manufacturers goods using inexpensive Mexican labour, and imported back duty-free to the United States for sale. The environmental consequences of the maquila program (under which United States companies were beyond the jurisdiction of US environmental laws and were thus relied upon to self-regulate) were: "Abnormally high incidents of cholera, tuberculosis and brain defects such as anencephaly ...[and] US chemical and auto parts manufacturers dumping highly toxic wastes such as xylene (associated with anencephaly and related neurological disorders), mercury, and petroleum directly into unlined pits in the earth at their plants, in close proximity to the homes of low-income families living next door" (Burton, 1994).

Around the same period in Europe, the failure of chemical industry self-regulation was dramatically exposed by a series of environmental disasters along the Rhine river. On 1 November 1986 a major spill at the Swiss warehouse of one of the largest chemical companies, killed thousands of fish and left many thousands of Germans downstream without drinkable water. Within the next month, three major industrial chemical firms, Hoechst, BASF and Bayer were all responsible for substantial discharges of toxic chemicals into the river system. This totally discredited the German chemical industry's self-regulatory mechanisms in the eyes of the public and of the government, and in December 1986 the German cabinet removed all six industry members from the joint industry-state commission on industrial accidents (Schmitter et al: 159,160).

[53] For the use of similar tactics under Responsible Care, see Posner (1992: 20).

[54] In addition to its direct regulatory function, INPO has established an elaborate and effective system for gathering and evaluating operating experience at each reactor and communicating the "lessons learned" to all utilities; undertaken on-site evaluation and review with utility executives of performance at all nuclear utilities; established utility employee training (and qualification) guidelines, and job evaluation criteria; and examined utility emergency preparedness plans.

[55] Wastle says: "I take strong exception to the term "self-regulation". It implies CCPA is taking over the role of government and hence it needs to set up the auditing, enforcement

and disciplinary structures that government usually sets up. If the public credibility of Responsible Care is based on that vision, we'll never make it. We are not going to do those things .. (Mullin, (1992): 131)

[56] Interestingly, this approach to Responsible Care is not emphasised when industry associations argue there is no longer a need for direct government regulation.

[57] See (Posner (1992) p.20), citing how such a process takes place during meetings of company chief executives. The letters written by ACIC to companies which are not in compliance, which escalate in their formality and moral tone, might also be seen as an attempt at corporate shaming.

[58] However, some industry participants argue that, as good environmental performance becomes the norm, so it will become easier to single out and stigmatise bad performers.

[59] 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" (Tattum (1993): 126).

[60] 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 (Begley, 1992: 68).

[61] 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.

[62] 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.

[63] 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.

[64] Such audits are contemplated at a later date (J Smith, 1994a).

[65] Again, the extent to which large firms are willing to implement initially expensive product stewardship programs may depend largely on how the tension between short term and long term considerations plays out. See p- above.

[66] The chemical industry's official position is that a degree of government intervention may be necessary in combination with the self-initiated safeguards of industry. However, in its view, that legislation should be relevant, practicable, and .realistic in terms of costs and benefits to the community.. Significantly, the ACIC now maintains that Responsible Care is already an example of co-regulation, on the basis that it involves a degree of government regulation in combination with industry self-regulation. However, while there are areas of Responsible Care, such as the Transportation Code of Practice, where compliance with the code overlaps substantially with the requirements of government regulation, there are also many others, such as Community Right to Know, where there are currently no substantial regulatory obligations, and where the term .self-regulation. is entirely appropriate.

[67] Also, it is not unknown for large companies who by virtue of economies of scale and technological sophistication, can attain higher environmental standards, to invite direct government intervention as a means of disadvantaging their smaller rivals, even, on occasion, causing government to put them out of business. In some respects, this approach may be too simplistic, since large companies mainly compete with each other, often relying on small operators for feedstock that it is not economic for them to produce themselves. In any event, there is no evidence that this strategy holds any appeal to the chemical industry for reasons identified in the text below.

[68] Indeed, any failure of government to intervene would confirm the critics' worst suspicions that Responsible Care is a sham intended to deflect direct government regulation (see Barr, 1992: 37).

[69] Consistent with this approach, the Victorian EPA has indicated that it will monitor very closely any company that refused to join Responsible Care or was expelled for failing to come up to standard (Smithers 1989).

[70] For example, a duty to ensure that "best practicable means" are used to limit pollution. For further examples of general duty provisions (see Fisher, 1993: 589-604).

[71] A performance standard defines a duty in terms of problems to be solved or goals to be achieved. In contrast, a specification standard is one in which the duty is defined in terms of specific types of methods that must be used to address environmental problems.

[72] On conventional "command and control" approaches as applied to the chemical industry, see Campbell-Mohr, Breen & Futrell , 1993: Ch 17.

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

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

[75] On the use of voluntary incentive-based and mandatory audits as an oversight mechanism, see Gunningham and Prest (1994).

[76] One respondent suggested that. .A way to get them to comply is a big stick by the Department of Planning. Although Planning has no power in respect of existing hazardous products. Any application for an extension must get development approval and a requirement can be risk assessment of an existing client to get it up to standard. One could advise councils to refuse development approvals and licences except to those who agree to join responsible care.. He suggests that one should only get planning approval if third party orders a report be provided. For example licensing might only be granted to those who conduct an independent audit every three years and provide that audit to the EPA.

[77] One regulatory strategy which seeks to reward self-regulation where it is practiced honestly and effectively, and to deter tokenism, is Braithwaite's pyramid approach based on a hierarchy of penalties (See Ayres & Braithwaite, 1993). Regulators start at the bottom of the pyramid assuming virtue - that business is willing to comply voluntarily. However, they also make provision for circumstance where this assumption will be disappointed, by being prepared to escalate up the enforcement pyramid to increasingly deterrence-orientated strategies.

[78] That is, it must be recognised that while most firms may be disposed to comply with Responsible Care provided they can be assured that others will do so, some number of opportunist firms will choose to defect.

[79] On differences in organisational behaviour and the difficulties of any universalistic approach to controlling organisations, see Fisse and Braithwaite (1993: 130).

[80] Many respondents maintained that such commitment was much less in evidence than it was in the mid to late 1980s. The perceived diminishing commitment of senior executives to Responsible Care could plausibly be explained in terms of bounded rationality (see Williamson, 1975; Scholtz, 1984). Senior executives are only able to take account of a limited number of variables in decision-making. In the mid to late 1980s, fuelled by Bhopal and other factors identified above, environment was certainly one of those variables. Since the recession and the downgrading of environment on the political agenda, it is much less obvious that environmental considerations are sufficiently pressing to influence decision-making at senior levels. See also the Australian chemical industry's largely negative response to the proposed Hazardous Workplace Substances Regulations, discussed above.

[81] Another example might be the self-regulation of the microwave industry in its early days when the industry needed to "overcome the inherent suspicion with which people view "new" technology" (Grumby, 1982: 97).

REFERENCES

ABRAMS, R and D WARD (1990), "Prospects for safer communities, Emergency Response and Community Right to Know (EPCRA) and the Prevention of Chemical Accidents" 14 Harvard Environmental Law Review: 135

ADAMS, P and M RUCHEL (1992) Unlocking the Factory Door, Report of the Coode Island Review Panel by the Hazardous Materials Action Group, Melbourne, Victoria.

AUSTRALIAN CHEMICAL INDUSTRY ASSOCIATION (1993), Australian Chemical Industry Association Annual Convention, Lorne, Vic, Feb, 1993.

AUSTRALIAN CHEMICAL INDUSTRY COUNCIL (ACIC) (1989) .Responsible Care Program Guide., Melbourne.

AUSTRALIAN CHEMICAL INDUSTRY COUNCIL (ACIC) (1990) .Responsible Care Program Guide., Melbourne.

AUSTRALIAN CHEMICAL INDUSTRY COUNCIL (ACIC) (undated) Responsible Care: A Public Commitment, pp 1-2.

AUSTRALIAN CHEMICAL INDUSTRY COUNCIL (ACIC) (1992), "Responsible Care: A Public Commitment", Melbourne.

AUSTRALIAN CHEMICAL INDUSTRY COUNCIL(ACIC) (1992a) "Insight", August 1992. - ACIC, Melbourne.

AUSTRALIAN CHEMICAL INDUSTRY COUNCIL (ACIC) (1993), Annual Report, Melbourne.

AUSTRALIAN CHEMICAL INDUSTRY COUNCIL (ACIC) (1994), "Product Stewardship: Interim Code of Practice," Melbourne.

AYRES, IAN and JOHN BRAITHWAITE (1992), Responsive Regulation: Transcending the Deregulation Debate Oxford, Oxford University Press.

BAGGOTT, R. (1989), "Regulatory Reform in Britain: The Changing Face of Self-Regulation" Public Administration Vol 67: 45.

BARDACH, E. and KAGAN, R. (1982) Going by the Book: The Problem of Regulatory Unreasonableness Philadelphia, Temple University Press.

BARR, G L (1992), "Responsible Care: Is the Promise Being Kept?", Occupational Hazards, (February): 37.

BEGLEY, RONALD (1991) "Product Stewardship: Exploring the 'How-to'" Chemical Week 149, 20(11 Dec): 13.

BEGLEY, RONALD (1992) "Implementing a Philosophy: Facing the Challenge of the Most Sweeping Code" Chemical Week 150, 23(17 June): 68.

BEGLEY, RONALD (1992a), "New TRI Data Shows Chemical Industry Remains Top Toxic Polluter" Chemical Week 152, 21(2 June): 8.

BEGLEY, RONALD (1993) "Will the Real Chemical Industry Please Stand Up" Chemical Week 153, 1(7/14 July): 18.

BELANGER, T (1991), "Responsible Care: Developing a Promise" Proceedings of first International Workshop on Responsible Care, European Chemical Industry Council, Rotterdam.

BELANGER, T. (1994) .Responsible Care: Beyond the Codes of Practice. Paper presented to Australian Chemical Industry Council Conference, Leura, Australia, February.

BLAKENEY, M and BARNES, S (1984), "Advertising deregulation: public health or private profit", in R Tomasic (ed.) Business Regulation in Australia, Sydney: CCH.

BLOUSTEIN,S., B DAVIS, L MILNE and S MUNN (1992), An Assessment of the Chemical Industry's Commitment to the Principles of Community Right to Know Melbourne: RMIT.

BRAITHWAITE, JOHN (1993), "Responsive Regulation in Australia" in P Grabosky and J Braithwaite Business Regulation and Australia's Future, Australian Institute of Criminology: 91.

BRAITHWAITE, J., AND FISSE, B. (1987) "Self Regulation and the Costs of Corporate Crime" in Private Policing, Shearing, C. and Stenning,P., California: Sage Publications.

BRAITHWAITE, JOHN (1989), Crime Shame and Reintegration. Cambridge, Sydney, Cambridge University Press.

BURTON, L. (1994), "Environmental Equity and Implementation of the North American Free Trade Agreement" Paper presented to Law and Society Association Meeting , June, Phoenix, Arizona.

CAMPBELL-MOHR, C and B BREEN and J.W. FUTRELL (1993), Sustainable Environmental Law, Environmental Law Institute, Washington DC.

CARROLL, J and R MANN (1992), Shutdown: The Future of Economic Rationalism, Text Publishing, Melbourne, .

CARSON, W G (1970) "White Collar Crime and the Enforcement of Factory Legislation" 10 British Journal of Criminology: 383-398.

CEREXBE, P. (1988) , "Advertising Self Regulation: the Clayton's Codes", vol 38 Consuming Interest: 16-20.

CHEMICAL MANUFACTURERS ASSOCIATION (CMA) (1992-1993) On the Road to Success: Responsible Care Progress Report, Washington DC.

CHEMICAL MANUFACTURERS ASSOCIATION (CMA) (1994), Responsible Care in Action,April, Washington DC.

CHEMICAL WEEK 148, 26(July 1991): cover page.

CHENOWETH, EMMA and KAREN HELLER, (1992) "Wanted: A System to Audit Care: Environmentalists and Industry Forge Ahead" Chemical Week 150, 23(17 June): 28.

CHENOWETH EMMA (1993) "UK Strikes to Achieve Continuous Improvement" Chemical Week 153, 1(14 July): 128.

CHENOWETH EMMA and D JACKSON(1993) "Tour de Workforce: The Ambassadors Big Opportunity to Influence the Public" Chemical Week 153, 1(July 7/14): 126-127.

COAD, B A (1988), "Industry Self Regulation' The Motor Trader (July): 42.

COEYMAN, MARJORIE (1993) "Making Product Stewardship a Reality" Chemical Week 153, 1(July 7/14): 37, 125.

COEYMAN, MAJORIE, (1993a) "Responsible Care; Code Implementation Contrasts" Chemical Week 153, 2 (21 July): 14.

COEYMAN, MARJORIE, (1993b) "Customers Get new Attention: Product Stewardship from the Buyer's Side" Chemical Week 153, 22(8 Dec): 35.

DE MORRIS, GREGORY (1993) "Whistle Stop for Delivers Transcaer Message" Chemical Week 153, 1(8 Dec): 40-44.

DYSON, K AND WILKS, S (eds) (1983), Industrial Crisis: A Comparative Study of the State and Industry, Robertson: Oxford.

ENVIRONMENT PROTECTION AUTHORITY (1993), .A Question of Trust: Accredited Licencing Concept.: A Discussion Paper, Environment Protection Authority, Victoria, Melbourne, July.

FISHER D (1993), Environmental Law: Text and Materials, Law Book Co, Sydney.

FISSE, B. AND BRAITHWAITE J. (1993), Corporate Crime and Accountability, Cambridge University Press, Sydney.

FORD C (1984) "Range Limitations and the free rider: The Assurance Problem" 46 Journal of Politics: 154-81.

FORSTER, CHRISTINE (1993) "Australia Steams Ahead, Removes Barriers to the Public: Improved Communications at Altona" Chemical Week 153, 1(7-14 July): 143.

FRIED, J (1992) . A citizen voice in chemical factories. Philadelphia Inquirer, 22 Nov.

FRIENDS OF THE EARTH (1992), Know More Toxics: Will Companies Give Citizens Around the World the Right to Know? (July) F E (US and UK).

GENN, H. (1985), "Great Expectations: The Role as Legacy and Employer Self-Regulation" Unpublished, Oxford Centre for Socio-Legal Studies.

GLECKMAN, H. (1992), Transnational Corporations and Sustainable Development: Reflections from Inside the Debate, Division of Transnational Corporations and Management, Department of Economic and Social Developments, United Nations, New York.

GREENERT, C (1991), Interview, quoted in "Responsible Care" Harvard Business School Documents, 9-391-135.

GREENPEACE (1994) .Community Right to Know and the myth of self-regulation., Greenpeace, Melbourne

GRUMBY, T (1982), "Self-Regulation: Private Vice or Public Virtue Revisited" in Bardach, E and Kagan, R (eds) Social Regulation: Strategies for Reform, San Francisco, Institute for Contemporary Studies.

GUARDIAN (1991), "How Green Grows the Chemical World," The Guardian (UK) (8 March): 15.

GUNNINGHAM, NEIL. (1993), "Who Audits the Auditors" 1993 10 Environmental and Planning Law Journal: 229-238.

GUNNINGHAM, NEIL, (1993a) .Thinking About Regulatory Mix: Regulating Occupational Health and Safety, Futures Markets and Environmental Law. in P. Grabosky and J. Braithwaite Business Regulation and Australia's Future ,Australian Institute of Criminology.

GUNNINGHAM, NEIL (1994) "Beyond Compliance: Management of Environmental Risk" in Environmental Outlook: Law and Policy . Sydney, Federation Press pp 254-281.

GUNNINGHAM, N. AND CORNWALL, A. (1993) .Legislating the Right to Know. Environmental and Planning Law Journal, August, 274-288.

GUNNINGHAM, NEIL and PREST, JAMES (1994) "Environmental Audit as a Regulatory Strategy" 15 Sydney Law Review: 496-526.

GUPTA, A and LAD, L.(1983) "Industry Self-Regulation: An Economic, Organisational and Political Analysis", Academy of Management Review p 8.

HARDIN, R. (1971), .Collective Action in an 'Agreeable-Prisoner's Dilemma.: Behavioural Science Vol 16, 472-479.

HARDIN, R (1968) "The Tragedy of Commons" 162 Science: 1247.

HIRL, J ROGER (President, Occidental Chemical Corp and Chair, Chemical Manufacturing Association executive committee) (1992), "Don't Trust Us, Track Us" Chemical Marketing Reporter, UN 242 No 21 (17 December).

HOLMES, CE, (1992) (Australian Chemical Industry Council), Address to Hazardous Substances Conference, Melbourne 1-2 June, p 3.

HUNTER, DAVID (1993) .Turning the touchstone to gold. Chemical Week, 11 Dec.

HUNTER, DAVID (1993) "Mixed Messages on the Impact of Care: How to square EHS&T spending with profitability" Chemical Week 153, 22(Dec 6):61.

HUNTER, DAVID (1993a) "Firming up Performance Goals and Support Networks" Chemical Week 153, 1(7/14 July): 16-18.

HUNTER, DAVID and ELIZABETH S. KIESCHE, (1992) "US - Implementation Time: Public Outreach Advances Lead the Way" Chemical Week 150, 23 (17 June): 10.

HUNTER, DAVID and RICK MULLIN (1992) "Responsible Care: The Challenge of Communication" Chemical Week 151, 23 (9 Dec): 22.

JACEK, A (1991), " The Functions of Associations as Agents of Public Policy" in A Martinelli (ed) International Markets and Global Firms, London,Sage: 148.

JACKALL, ROBERT (1988), Moral Mazes. New York: Oxford University Press.

KENNEDY, ROBERT D (1992), "Sustainable Development - the Hinge of History," Paper presented at the Industry Forum on Environment and Development, Rio de Janiero, May 28, 1992.

KIRSCHNER, ELIZABETH (1993) "New Jersey: State Ambassadors" Chemical Week 153, 1(8 Dec): 40.

KIRSCHNER, ELISABETH, (1993a) "Canada Puts Third-Party 'Audits' on the Table" Chemical Week 153, 17 (17 November): 10.

KIRSCHNER, ELISABETH and EMMA CHENOWETH with LYN TATUM (1993), "Measure, Verify, Audit for Credibility: looking to Europe, Canada for a New Requirement" Chemical Week 153, 1 (14 July): 28.

LEWIS, S.J.(1991), "The Role and Limits of Volunteerism", paper for International Conference on Corporate Environmental Responsibility October, Tutzing, Germany.

MAITLAND, I. (1985) .The Limits of Business Self-Regulation., California Management Review, Vol 37, pp 132-147.

MARVEL, H P (1977), "Factory Regulations: A Reinterpretation of the Early English Experience" 20 Journal of Law and Economics: 379-402.

MOTIVE MARKET RESEARCH (1992) - .Monitoring Community Attitudes .Motive Market Research Pty Ltd Dec pp 11-12.

MULLIN, RICK, (1992) "Canadian Deadline Approaches: Contemplating Continuous Improvement" Chemical Week 150, 23 (17 June): 128.

OLSON, M. (1965) The Logic of Collective Action, Cambridge, Mass, Harvard University Press.

PAGE, A.C. (1980), "Self Regulation and Codes of Practice" Journal of Business Law: 24.

PASHIGAN, B.P.(1983) .How Large and Small Plants Fare Under Environmental Regulation: Regulation Sept/Oct, 19-23.

POGE, J. AND HOROWITZ, D. (1990) .Phantom Reductions: Tracking Toxic Trends., National Wildlife Federation.

POSNER, T (1992), The Engineer (5 March): 20.

PUBLIC INTEREST ADVOCACY CENTRE (1991), The Toxic Maze International Bus Systems, Sydney.

RAPPAPORT, ANN and M FLAHERTY (1991) Multinational Corporations and the Environment: A Survey of Global Practices Centre for Environmental Management, Tufts University, 1991.

RAU, CHRISTINE (1993), "Chemical Industry Out to Clean Up Image" The Age 14 October: 10.

REA, J C, (1991) "Product Stewardship - a basis for industry/government partnership" Optimum: Journal of Public Sector Management.

REGULATION SYMPOSIUM (1988) v 45 Washington and Lee, Law Review pp1245-1390.

REES, J (1994), Hostages of Each Other: The Transformation of Nuclear Safety since Three Mile Island, University of Chicago Press.

RICHARDSON, J and J MOON (1984), "The Politics of Unemployment in Britain," Political Quarterly Vol 5, 5: 29-37.

ROBINSON, P. (1993) [title] Chemical Week July 14, pp 28-29

ROGERS, JAMES E. (1992), "Adopting and Implementing a Corporate Environmental Charter" Business Horizons 38,2 (March to April): 30.

ROTMAN, DAVID (1991) "Pushing Pollution Prevention" Chemical Week 148, 26(July 17): 30.

ROTMAN, DAVID (1991a) "Winning Nods from Naysayers: An Elusive Goal" Chemical Week 149,20 (11 Dec): 33.

RUNGE, C.F. (1984) .Institutions and the Free-Rider: The Assurance Problem in Collective Action. Journal of Politics v 46 pp 154-81.

SANDMAN, P.(1991) Addressing Scepticism About Responsible Care. Environmental Communications Research Program, Rutgers University, NJ.

SCHMIDHEINY, S (1992), Changing Courses. Cambridge, Massachusetts: MIT Press.

SCHOLTZ, J. (1984) .Co-operation Deterrence and the Ecology of Regulatory Enforcement. 18 Law and Society Review 129-199

SHEBECOFF (1989) .Bhopal Disaster Rivals 17 in US. New York Times, April 30

SHRIVASTAVA, P (1992), Bhopal: Anatomy of a Crisis. London: Chapman Publishing.

SIGLER J and J MURPHY (1988) Interactive Corporate Compliance: An Alternative to Regulatory Compulsion. Quorum Books, New York

SIGLER J AND J MURPHY (1991) (eds) Corporate Lawbreaking and Interactive Compliance: Resolving the Regulation-Deregulation Debate. Quorum Books, New York.

SMITH, JIM (1994), "Measuring Health, Safety and Environmental Performance: Why, What and Whose?" paper presented to Australian Chemical Industry Council Convention, February, Leura, NSW.

SMITH, JIM (1994a) (Responsible Care Coordinator, Australian Chemical Industry Council) (1994), interview with author, 6 May.

SMITHERS, RICHARD (1989), "Chemical firms Adopt Code to Clean Up the Industry" The Age 27 September: 5.

SNOWY MOUNTAINS ENGINEERING CORPORATION,(1992) Survey, July.

STRINGER J and J RICHARDSON, "Managing the Policy Agenda: problem definition and policy making in Britain", Parliamentary Affairs Vol 33, pp 23-39.

TASSIE, J.(1993), "NCAP: Roles in Responsible Care" paper delivered to ACIC Annual Conference February, Lorne, Victoria.

TATTUM, LYN (1993) "Product Stewardship: Old Practice New Theory" Chemical Week 153, 1(7/14 July): 125-126.

TRADE PRACTICES COMMISSION (TPC) (1988), Self Regulation in Australian Industry and the Professions, Canberra: Trade Practices Commission.

TURNER, RIK (1991), "Responsible Care on the Back Burner" Chemical Week 18 September 1991: 28.

UNCED (1992), "Agenda 21 Documents," Pegasus.

VINCENT R (1992) Chemical Week 17 June,29.

VOGEL, D (1986), National Styles of Regulation, New York: Cornell UP.

WARBURTON, R. (1993) .The Importance of Occupational Health and Safety in the Chemical Industry., Paper delivered to Australian Chemical Industry Council, Lorne, Victoria.

WASTLE, BRIAN (1993), Vice-President, Canadian Chemical Producers Association, Letter to author Nov.

WILLIAMSON, O.R. (1975) Markets and Hierarchies New York, Free Press.

WINSEMIUS, PETER and ULRICH GUNTRAM (1992), "Responding to the Environmental Challenge" Business Horizons 35, 2 (March to April): 19.

WITHERS, J. (1988), Major Industrial Hazards: their appraisal and control, New York: Halsted Press.

ZAGEMA, B (1992), "The End of One World" in Rio Review,. Geneva: Centre for Our Common Future

CASES CITED

Ciba Geigy v Worksafe Australia, Adminstrative Appeals Tirbunal 24 January 1994, No p93/339, p 22