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Motivating Management: Corporate Compliance in Environmental Protectionⁱ

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Based on interviews with facility managers in the electroplating and chemical industries, this study examines regulated firms' perceptions of how various instrumental, normative and social factors motivated their firms' environmental actions. We found that 'implicit general deterrence' (the overall effect of sustained inspection and enforcement activity) was far more important than either specific or general deterrence, and that deterrence in any form was of far greater concern to small and medium sized enterprises than it was to large ones. Most reputation-sensitive firms in the environmentally sensitive chemical industry viewed regulation chose to go substantially beyond compliance for reasons that related to risk management and to the perceived need to protect their social license to operate. Almost half our respondents also provided normative explanations for why they complied. Overall, we conclude that there are various, often interwoven strands that must be taken into account in understanding what motivates corporate environmental behavior, and how they play out depends very much on the size and sophistication of companies themselves and on the characteristics of the industry sector within which they are located.

I. Introduction

Most regulatory policymakers and officials, at least in the United States, believe that strong legal punishment of serious and willful violations serves a vital "general deterrence" function.¹ Underlying this view is the assumption that regulated business corporations take costly measures to meet public policy goals only when (1) specifically required to do so by law, and (2) they believe that legal non-compliance is likely to be detected and harshly penalized.² From the viewpoint of traditional models of business firms as "amoral calculators,"³ why would a profit-maximizing company want to do what the law requires in the absence of credible regulatory enforcement, since meeting public policy goals is often expensive and usually does not in any obvious way provide the company with any marketplace advantage?

Yet research in various areas of social regulation indicates that the link between deterrence and compliance is complex. Regulated business firms' perceptions of legal risk play a far more important role in shaping firm behavior than the objective likelihood of legal sanctions (Simpson 1990:Ch2). More significantly, deterrence in either form may be far less important than many regulators assume.⁴ In one of the best studies, Braithwaite and Makkai (1991) found that in the case of nursing home regulation, there was virtually no correlation between facilities' regulatory compliance rates and their perceptions of the certainty and severity of punishment for violations, except for certain minorities of actors in some contexts (Braithwaite & Makkai 1991:35).

This and other research suggests that in addition to the threat of legal punishment, regulated enterprises' motivations to comply with regulatory requirements stem from a wide variety of other factors, including a general belief in the legitimacy of regulatory requirements (Tyler 1990), perceived social costs, shame or guilt (Grasmick & Bursik 1990), informal sanctions inflicted by local communities, NGOs and others (Gunningham et al. 2003), and so on.⁵ These findings raise a series of questions:

- (1) In stimulating compliance by particular regulated businesses, how salient and important are the “general deterrence” messages sent by formal legal sanctions against other firms, compared to
 - (a) the “specific deterrence” engendered by inspections of and legal sanctions of the firm itself, and
 - (b) the “implicit deterrence” message sent simply by the dissemination of governmental regulations,
 - (c) the threat of informal economic and social sanctions, or
 - (d) normative commitments to compliance with laws and regulations?

- (2) Do motivations vary across firms - depending for example, on the type and size of organization (Gray & Scholz 1991:185-214), or the characteristics of particular industry sectors?

One perspective on these questions is provided by a related article in this Special Issue (Thornton et al. (2005)), in which we report the results of our survey of 233 firms in 8 industries. In each of those 8 industries, at least one firm (not including any in our sample) had recently been the subject of a serious legal penalty for violating US environmental law. The survey findings suggested that most respondents did not follow closely and remember news of legal sanctions against other firms in their industry, carefully calculating their responses accordingly. There was little evidence for the direct response to such knowledge predicted by what we labeled “explicit general deterrence” theory. Yet there was some support for what we labeled “implicit general deterrence” – the sense that the mere existence of official laws and regulations entail both some risk of punishment and a duty to comply. Thus almost all respondents could remember some salient legal actions against some firms at some time in the past. And a majority reported that hearing about legal sanctions against other firms had prompted them to review, and often to take further action to strengthen, their own firm's environmental program. For most respondents, hearing about sanctions against other firms had primarily a “reminder” and “reassurance” function – reminding them to review their own compliance status and reassuring them that if they invested in compliance efforts, their competitors who cheated would probably not get away with it.

This article reports on a second phase of the same research project. It entailed longer, more in-depth interviews with industrial facility managers in the electroplating and chemical industry -- two of the 8 industries that were the focus of the 233-firm survey. By means of the in-depth, more discursive and qualitative interviews, we sought to delve more deeply into

regulated firms' perceptions of the role of general deterrence, specific deterrence and other factors in motivating their firms' environmental actions. And these qualitative interviews also enabled us to pay closer attention to the role of firm size and industrial context in shaping managers' motivations in dealing with environmental problems. The basic theory of general deterrence and its alternatives are discussed in a literature review in Thornton et al. (2005) and are omitted here for the sake of brevity.

II. Methodology

We undertook a series of in-depth telephone interviews, asking open-ended questions to a sample of 34 chemical and electroplating companies in two different states (Washington and Ohio).⁶ These two industries were selected for more intensive study from the eight industries that were the focus of our survey research (Thornton et al. (2005)), and were chosen because they varied most strikingly by average size and sophistication of firm, from small (electroplating) to larger (chemicals). The questions were designed to assess the relative salience of (a) general deterrence messages (b) other regulatory pressures (inspections, fear of private lawsuits), and (c) community, market-based, and reputation based pressures, in shaping the facility's environmental behavior. Our basic strategy here was to ask company officials and environmental managers to describe the most important environmental improvements they had made in recent years and the environmental actions they were most proud of, and why they had undertaken them (without prompting as to potential explanatory variables). Later in the interview we asked them to rate various factors, as causative

influences. Finally, interviewees were asked directly and explicitly for their view of the effect of deterrence on their company and industry's behavior.

When coding interviews, the questions were divided into four areas: (a) respondents' theories of how and why the *industry* had improved (Q1), (b) respondents explanations of why their firm had undertaken *particular* environmental actions(Q2-4), (c) respondents general explanation of their environmental motivations (Q5-6); and (d) respondents responses to prompts about the importance of punishment and deterrence (Q7-9). We also draw on data gathered in our 233 firm survey, particularly, statistics relating to Colorado electroplaters and Kentucky chemical manufacturing and blending facilities.

Electroplating companies were chosen for examination because the industry has important environmental impacts, because it has characteristics that inhibit the application of conventional regulatory measures (Gunningham & Sinclair 2002) and detract from the effectiveness of deterrence, because it has been targeted by regulators as a high priority for enforcement action, and because companies in this industry tend to be small or very small. Among interviewees, company size ranged from 1 employee to 117 employees, with a median size of 32 employees. In part as a result of the small size of most firms, the electroplating industry has not been the subject of sustained environmental campaigns by activist organizations or community groups, and 'social license' pressures (Gunningham et al. 2004), have been muted. Thus examining this industry allows us to compare the different external drivers of different types of companies and how small (defined as under 30 employees) and large enterprises differ in terms of their environmental motivations.

Chemical companies were chosen because this industry also has important environmental impacts, because it has been subject to substantial regulation for many years because it has often been under intense scrutiny from communities and local activist organizations, and because it contains both (SMEs) and large corporations, enabling us to study both groups within the same industry sector. While company size varies a good deal (from 20 to 67,000 employees), only two chemical manufacturing companies in our sample employed fewer than 100 people, and half (7/15) employed more than 1,000 people. For present purposes, SMEs are defined as those with less than a thousand employees. Thus all electroplaters (the largest of whom had 117 employees) and half the chemical companies constituted our population of SMEs.

Beyond this, there are further reasons why these two industry sectors are well suited for testing the credibility of deterrence theory. To the extent that there may be niches where deterrence has greater explanatory power (Braithwaite & Makkai 1991) then one might speculate that these will include business organizations involved in the pursuit of profit (Braithwaite & Geis:292); and to small, simple organizations with minimal principal-agent problems (Braithwaite & Makkai 1991). The electroplating and chemicals industries both involve business organizations rather than individuals, and both involve a substantial number of small organizations (but also large ones whose response we can compare). And since perceptions apparently matter far more than the objective imposition of sanctions, there is special appeal in studying an industry - such as electroplating - where the perception of deterrence action is particularly high.⁷

In terms of the codes used below, E = Electroplater, C = Chemicals, O = Ohio based, W = Washington based, s = small electroplater (under 30 employees), l = large electroplater (over 30 employees), S = Small or Medium Sized chemicals enterprise (under 1000 employees), L = large chemicals enterprise (over 1000 employees). The number at the end of the code is the identifier of the particular enterprise.

III. Change over Time

Our industry respondents were almost unanimous in asserting that the environmental performance of their industry had improved very substantially over the last 10-15 years. Electroplaters could often give graphic descriptions of how their own facilities had improved over that period. For example EO1-5 recollected how his workplace “was a complete mess 17 years ago...we were accumulating waste under the decks and there was two feet of sludge under the floor from drips and spillage. It had to be seen to be believed.” And EOs-15 similarly reflected that “In all honesty, this place was a shithole, there were plenty of fumes and our workers had to get nasal exams on a regular basis.” They, like numerous other respondents, described a substantial shift from a ‘dump and drain’ mentality (“if you had to get rid of something you just dumped it” EW1-12) to a more responsible approach, involving use of fewer, and less toxic chemicals, reduced water consumption, reuse and recycling, and disposal to prescribed facilities.⁸

In the case of the chemical industry, the defining ‘wake up call’ for many large companies was the environmental disaster at the Union Carbide’s Bhopal chemical plant in India, which killed an estimated 2-3000 people in 1984 (Shrivastava 1992). This had prompted collective action by chemical companies internationally and the development of a management system-based, self-regulatory program for curbing environmental hazards: Responsible Care (Gunningham & Grabosky 1998:Ch 4). However, many respondents also identified a range of much more recent changes in attitudes and outcomes, especially in reducing the amount of waste generated and disposed of, and in curbing emissions. As CWS-9 put it: “companies have become more knowledgeable about the long term impact of their choices and have become more diligent about properly disposing of their by-products. Also they have decreased exposures, both to their workers and the community.”⁹

In both sectors, far more complex than determining whether the industry has substantially improved its environmental performance over the last decade or so is determining *why* it has done so. The motivational jigsaw that we attempted to piece together from our interview data, led us to believe that very different factors were at work in the two sectors and that, particularly within the chemical industry, there were further differences between the motivators of large corporations and of SMEs. For heuristic purposes, we examine these motivators under a number of discrete categories below while exploring the interaction among those categories in the subsequent discussion.

IV. The electroplating industry: Resistance is Futile

The electroplaters in our sample were almost entirely small enterprises. The very large majority had less than 100 employees, many less than 50 and some less than five. Only four had more than 100 employees and more than a single location.

A. Legal incentives

All electroplaters unequivocally attributed the markedly improved environmental performance of the industry to the effects of regulation and/or enforcement. Their responses did not clearly untangle the relative importance of regulations' normative message from the threat or actuality of enforcement. Nor was the relative salience of general deterrence versus specific deterrence entirely clear. But as we will see, regulation permeated respondents' decision-making process and shaped their options in taken-for-granted ways, generating a perception that, as the Borg in Star Trek put it: "resistance is futile."¹⁰

Sanctions. For most electroplaters, the specter of legal sanctions for non-compliance was never far from their minds. Ninety percent believed that the threat of fines and jail or prison sentences was a powerful motivator of environmental action for their industry. And almost half, when explaining why *they* had undertaken an important environmental measure, described a fine or prison sentence that had occurred at the company (specific deterrence 24%), a fine or prison sentence that had occurred at another company (general deterrence 12%), or mentioned that the action had been taken to avoid a fine or prison sentence (12%).

For most, sanctions had an obvious and powerful impact. According to EO1-9 “Monetarily, companies have been hesitant to install treatment equipment that was required to meet the regulations. The financial burden was substantial – “what’s in it for me?” The answer was “if you don’t, you get fined or sent to jail” EW1-5, when asked, “How were you able to convince the owner to spend on environment?” replied “Fear basically. He decided to go along with it when he found out the he could get fined for not dealing with the situation.” Indeed there was almost a sense of inevitability about being penalized for noncompliance – a sense that in the long run, you simply could not get away with it.

EWs-14: “I ain’t never been fined but... It’s pretty easy in a business like this for them to detect things in the water. Especially where I’m the only one in this county, you know, that has the chemicals that I have. And the trouble with the fines are... Like I said, I never had one, but the place I worked at, they had a couple. And they seem to get larger, you know, for the same thing. They keep raising it. I think more or less to make you want to do something to correct it... Being a small business, I can’t afford to be fined you know. I make it from one month to the next”.

The fear of fines in turn was often used to bring about internal changes within the firm. As one owner put it to his workforce: “If we get a fine your raise is gone – there’s a direct relationship. It’s a good way to make it hit home” (EO1-4). And another made “everyone aware we need to do whatever and we make them more cost conscious. If we don’t do it right we might get a \$10,000 fine...If they know they’re going to be inspected they don’t want to pay fines because its money down the drain” (EO1-3).

Significantly, the size of these ‘inevitable’ penalties, were seen as sufficient to result in facility closure. Sixty percent of electroplaters interviewed felt there were only two choices: comply or be closed down, and 35% mentioned at least one specific example of an electroplating company that had gone out of business either trying to keep up with the regulations, or because of penalties imposed by the regulations. Typically, EOI-9 told us: “I’ve worked for a number of companies. The ones who were not serious about protecting the environment are no longer in business. Either they couldn’t withstand the regulatory burden or they got closed down.” And for EOs-10: “[Putting in the water treatment system] was an expense we would rather not pay, but the choice was to close down.” Others referred to stories of firms elsewhere who: “have just gone out of business because the regulations have gotten so tough down there. I had a guy call me last week that wanted to get a couple of things plated and he said there were no plating shops left close to him” (EWs-14).

Similar results to those of our Washington and Ohio interviews were found in our random survey (Thornton et al. (2005)) of 17 electroplating facilities in Colorado.

Regulation and implicit deterrence. But for most facilities, it was the direct impact of regulations themselves that was the *immediate* driver of their environmental behavior, as the following examples make clear: “we had to do it [put in an air purification system]- it was the law” (EWs- 6); “regulation was the driving force and we just implemented it” (EOI-3); “everything we’ve done we’ve done because of regulations coming aboard or those already there so we could meet them easier” (EOs-11); And “As the laws changed, we finally

changed” (EW1-12). And EWs-14 summarized the incremental but seemingly inexorable nature of the regulatory process as follows: “When I first went to work in this trade I didn’t even know what the EPA was, and then all of a sudden I started hearing a little bit about them, and the next thing I know they start coming around the place that I worked. Maybe once a year they’d come along. They didn’t come around too often. Then pretty soon they started coming up with regulations, you know. You can’t discharge more than this. And, at first if you watched it you could stay within the limits pretty easily. But then they lowered the limits. It kept getting tougher and tougher.”

When our respondents described the impact of regulations they rarely made an explicit reference to the role of sanctions, and portrayed the impact of regulation upon them as a very direct one. Yet taken in the context of their references elsewhere to the importance of sanctions, as described above, it was clear that there was an implicit recognition that non-compliance would sooner or later result in penalties. And respondents made taken-for-granted assumptions about the potentially disastrous effect of punishment in the event of breach. We return to what we term “implicit deterrence” in the discussion section.

Proactive environmental behavior, not mandated by regulation, was unusual amongst electroplaters, but not unknown. We found three instances where an electroplater had sought out ways to save money by making environmental improvements independent of regulation. The other electroplaters reported taking environmental action only when regulation required them to do so. Yet it was common for electroplaters to acknowledge that once they had responded to regulatory pressure by making environmental improvements, there were

sometimes considerable gains to be made from exploiting the ‘win-win’ opportunities revealed. For example for EWs-7 “we get huge savings. We used to cool our tanks by water which we dumped in the city sewer. It’s monitored. Then 6 or 7 years ago a cooling tower was installed – we moved from 500,000 gallons to minimal water usage – the bill was \$2-3,000 per months now its \$126 a month. And we are recycling cooling water...We made [the changes] because we were told to make them.” And EWs-14 (a one person operation) described how he made savings on chemicals by rinsing over a rinse tank and then putting the rinse water back into the process. Asked whether he would have made those savings without the regulations, his response was: “Probably not. I wouldn’t have been forced into doing what I’m doing, you see.”

Inspections. Inspections (and the anticipation of future inspections), had a powerful influence on firm behavior, and whatever inspectors required, electroplaters seemingly implemented. EWs-2 summed it up as follows: “They [EPA] came in and said we want this, this and this done. And they wanted to see the improvements.” “They [the regulators] are making platers do things more ethical. Everything used to go down the drain...They made us put in a treatment system. Now we’re careful not to have chemicals lying around. We’re careful about drip and run off from tanks, and we make sure there’s no spillage. We’ve improved because we are annually inspected” (EOS-1). Similarly for EWs-2: “The [EPA] guy looks through the whole shop for things that are not in place –the dirty filter with cyanide residue on it, the chemicals that shouldn’t be next to each other.”

For the most part, these responses suggest that inspections, *with their implicit threat of specific deterrence*, played a prominent role in decision-making by making the need to comply appear inevitable. Indeed, our respondents' comments in the previous section about the importance of regulation must be read in the context that once the regulation was in place, they believed they would be inspected, infractions would be detected, and powerful sanctions imposed.

The legitimacy of regulation. Despite what was uniformly reported as the high costs of compliance, most electroplating facilities thought that environmental regulations were legitimate. In fact, complaints about enforcement action tended to focus on the injustice of others *not* being penalized, or not being penalized harshly enough. For example EO-15 complained about inconsistency, citing the fact that “we got a \$10,000 fine because we were late in testing new equipment, which we had gotten so as to be in compliance, while [another company] was found to have dumped their wastes and they only got \$1,000 fine.” None of our respondents criticized the need for regulation and a number actively endorsed it. EWs-7 for example, said “There’s been no opposition. Once it’s presented to you that the air is not good for you, it’s ludicrous to disagree...We didn’t know any better fifteen years ago. We dumped it all...It [regulation] has been a good thing.”

This was a common sentiment, suggestive of an ethical dimension to decision-making, and for some 40% of respondents, there was a clear vein of civic responsibility in the way they couched their responses. This group professed to make changes required by regulation simply because it was ‘the right thing to do’. For example:

EOI-3: “when I was hired the first statement was ‘we do nothing illegal –if you are harboring those thoughts, don’t work here’. They mean it.”

EWI- 12: “above and beyond the cost savings, you do the best you can as a corporation to protect the environment and the community-we’ve all got to live here and breath the same air and share the same water”

Those who offered a civic responsibility explanation for their behavior tended to divide the world into two classes of people (good guys and bad guys) and to talk pejoratively about the bad guys, who were commonly seen not just as immoral but as ‘stupid’, incompetent or irrational. Consistent with this civic responsibility theme, almost half of the electroplaters in our sample also expressed support for co-operative regulatory styles in which they were given information and technical advice to facilitate compliance and minimize compliance costs. As such, they implied that coercion was unnecessary. For example, “some people despise regulators. I can’t agree. In our industry they work with me –they give us technical options and we decide which we go for...We work hand in hand...Once we know it’s hurting the environment, we’d don’t do it” EWs-7. Indeed, for this respondent, complying with regulation, doing the right thing, and following the inspector’s advice, were so closely connected that he found it difficult to disentangle their influence. Similarly for EOs-1: “I don’t know all the rules. I do what I think is right...There is only so much you can learn. If someone comes in I say, “You’ll find things that don’t fit with the rulebook. Work with us to get into compliance.”

This ethical concern for environmental performance and belief in the legitimacy of environmental regulation was not universal. One company in our sample expressed the viewpoint that compliance, or the appearance of compliance, was simply instrumental. “It’s all about money. Most owners want to play the game to make a certain amount and then get out, with no concern for the employees health and safety. Consequently, they want to scrimp on everything they can...[they spend on environment] to stay in the good graces with the regulators...to keep ‘em away from us” (EOI-5).

Perhaps understandably, therefore, many of those firms who supported regulation as ‘the right thing to do’ wanted harsh punishment for recalcitrant firms that evaded the law or made no effort to comply.

General Deterrence. General deterrence is premised on the notion that punishment to one person/enterprise will discourage others from engaging in similar proscribed conduct. Most electroplaters did not *consciously* see general deterrence (hearing of other companies being sanctioned) as playing a motivational role in their environmental behavior. In response to our specific prompts, only one facility saw general deterrence, in this narrow sense, as a powerful motivator of their environmental actions, while 11/17 saw it as relatively unimportant in their decision to take an environmental action. Only 2/17 facilities reported that general deterrence had motivated them to take an important environmental action. EOI-5 described taking environmental action because of “fear-when we found we could get fined – someone at a

company where a lot of us used to work was shackled [sent to jail] – which scared our owner.”

However, enforcement actions against others focused their attention on environmental issues. Company respondents described such cases as ‘head turners’ and ‘keeping you on your toes.’ EOs-10 said, “If we hear of others getting fined, we figure why they got in trouble and we try to do it right.” But most facilities told us that although they might look, they very seldom made any changes. Several reasons were cited: (i) They often heard about deterrence actions second or third-hand through word of mouth and lacked sufficiently reliable details to know what action was appropriate. (ii) Differences in the nature of the work companies did, or the size of the facilities, made comparisons difficult. (iii) Those that were punished were seen as fundamentally unlike our respondents – as ‘bad guys’ who flagrantly ignored the law.

Despite their rather muted endorsement of general deterrence, most facilities nevertheless believed that without general enforcement and sanctions the environmental performance of their industry would decay over time and that some fraction of companies (the ‘bad guys’ or those who couldn’t afford to comply) would stop complying. However, the vast majority of respondents reported that their own facility’s performance would not decay. Most reported that they would continue to operate their treatment systems, although ‘little things,’ like completing hazardous materials labels, might not get done, and new environmental protection measures might not be initiated, at least where these were expensive. As EWS-6 put it: “I like to think we’d be smart enough to be prudent. But when it comes to writing the check for \$80 or \$90,000, you’d look at what some of the other people are doing”.

B. Economic Motivations

While all electroplaters attributed improvements in the environmental performance of the industry to regulation, enforcement or liability (the legal sphere), 40 percent of larger electroplaters (4/10) also attributed improvements to economic incentives, while none of the smaller electroplaters did so. For example, when asked why things had improved, EW1-12 responded: “Regulations. You must meet them to stay in business. But also to conserve on basic commodities [water, materials]. There is a savings there to us. The push to conserve has occurred in the last 15 years. Pressure on our bottom line. It [conservation] makes the bottom line look a little better.” For EO1-13: “Why have things improved? For compliance reasons and to cut down on the cost of hazardous waste.” For EO1-4: “There is a greater emphasis on pollution prevention because of EPA and more advertising...There is also a drive for cost savings.”

However, when explaining why they had taken *particular* important environmental actions, 90% of Ohio facilities and 50% of Washington facilities attributed these actions partly to the economic sphere. Larger and smaller companies were equally likely to mention economic incentives. These tended to fall in one of two categories: taking action to achieve cost savings, and taking action in response to customers’ concerns. In terms of the former, the following responses were typical:

EOs-10: “We are always doing preventive maintenance. It’s crucially important in terms of the environment. Why wait until it breaks down? Then the whole system is down... It saves money”.

EOI-9: “There are a lot of things we investigate regarding recycling waste. ... Not so much to reduce costs but also to reduce down the road liability. *Both* are important”.¹¹

In terms of customer concerns, some Ohio electroplaters in particular talked about supply chain effects: demands from large customers for good environmental performance, and in one case, influencing customers to improve *their* environmental behavior.

EOI-8: “We are indirectly affected [by environmental groups] through the large companies that use our services ... because they are getting pressure from them [the environmental groups]. So that affects aerospace and defense, and we have to remove chrome and chrome products from our products”.

EOs-11: “Obviously all our environmental information is public knowledge. Getting rid of something that’s bad – that’s good for our image. Bad news travels fast. If they [the city] puts your name in the paper as a bad guy. Our customers like that we are trying to stay environmentally sound. If not, customers worry that you’ll go out of business....We talked to the customers about cadmium, and most of the customers switched to another coating”.

Those in niche markets with sensitive supply-chain relations were most likely to experience customer pressure. EOI-4's clients were the big 3 car companies who are on the brink of insisting that their customers have ISO 14001 environmental management system certification. Largely for this reason, EOI-4 said, "we need to position ourselves" for improved environmental performance. Similarly, for EOI-3, whose market was the environmentally sensitive (and powerful) aerospace industry, environment also took on a different complexion: "We are the elite of plating ...We do lots for the aerospace industry...If you don't have an environmental reputation they won't allow you to work for them." And for EOI-8: "We're indirectly affected by large companies that may use our services on their product or for the government which has requirements to eliminate certain compounds— Defence, the aerospace industry."

The Limits of Economic Motivations. Despite the economic incentives described above, respondents identified a range of other circumstances in which the costs involved in making environmental improvements far exceeded any economic benefit. So for EWs-6, "The state of technology makes it difficult to get some metals out [of our discharges]- Most shops can't reach the [regulatory] standard because the equipment and chemical stuff we use don't get us there. It would take research or very expensive equipment." Similarly for EWs-7, the costs of compliance were considerable and with adverse economic consequences: "It put our prices up. None of them [customers] were happy but what can you do? We did lose a portion of business." EOI-8 also reported that "the biggest obstacle is cost- it's money all the time – the number one factor which makes us decide how well to comply. Our company spent over \$1 million upgrading between '93 and '95 to meet new regulations." EWs-2: "There are

extreme costs in cleaning up. It costs \$700 to shift fifty gallons of waste. But you've no choice but to do it." Again for EO1-8: "cost is a great concern for a small company...It's highly competitive and not easy to raise prices".

Moreover, even where environmental actions led to cost savings, many respondents, particularly from small companies, told us that they would likely not have taken action in the absence of regulation. And while customer concerns were at least a partial motivation for the environmental actions of some facilities (6/17), the majority considered their *environmental* reputation with their customers as unimportant. For most, it did not offer any competitive advantage: "My customers aren't concerned...Unless you're really bad, it's the quality of the product counts" (EWs-2); "It's customer driven. They want speed of turnaround and quality and inexpensive. Typically the customer takes a visual look at the plating on the part. If you have a reputation for lousy jobs you don't last long. But environmental performance doesn't matter to them" (EO1-4).

Other motivators. While all electroplaters described legal motivations as important, and a significant proportion also referred to economic incentives, a minority was also influenced by other considerations. A third of Ohio electroplaters talked about the impact of environmental actions on the health and safety of employees as at least partially motivating their behavior. For example, EO1-5 asked: "Who is going to work in two feet of sludge? As well as health problems that would accumulate with workers and the sick leave that we would end up having to pay." Similarly, a minority referred to broader concerns about "keeping their workers happy." Thus EO1-1 reported that "we keep the place clean and neat...it makes our

workers come to work with a better attitude...Ten to fifteen years ago the shop paid minimum wages and worked people very hard. People in the industry would say 'that's a terrible place to work'. So now we have safety gloves and rubber boots. We tried to raise salaries, keep good workers and keep clean and our reputation turned around".

In addition, a number of large Ohio electroplaters (4/6) mentioned the role management played in their particular environmental actions. EO1-13 thought that the most important environmental action his company had taken was putting in place a full-time environmental coordinator. His explanation for why a person was hired was "They needed someone to see we stayed in compliance more or less ... It was just that new management came in and saw that it [environmental] was always on the back burner before. Where he came from they stayed fully in compliance." Similarly, EO1-3 believed that their hazardous waste practices were their most important environmental actions. They had undertaken them because "it saves us a lot of money" and because of "attitude – upper management involvement ... once upper management says yes, it gets followed." However, in total, only 4/17 electroplaters mentioned management matters.

External pressure groups, such as environmental NGOs (local or national), and local community groups, were conspicuous by their absence or lack of influence. Most of them felt that they were too small to be of interest to such groups. As EWs-2 put it: "We're a small outfit so they don't mess with me." Only one company mentioned any indirect effects that environmental groups had on their environmental performance through the pressure they exerted on large customers (see above).

Nor did the majority see their general standing with the community, at best, as having more than marginal significance: “Reputation? It’s part of the picture. You don’t need your name in the paper. Is it a major issue? No” (EOI-9). Some saw it as of no importance whatsoever: “Reputation? No people don’t know about it” (EWs-7); others as a cosmetic add on “if you are neat and organized, people see you care”(EOs-1) or, almost independent of environment decision-making, as part of good citizenship: “We donate things and do our part - we’re well taken in our community” (EWs-7). And for EOI- 5: “The community comes last” and had no impact on decision-making. “I would be disappointed if we were looked down on as a great big polluter. If our reputation is that we are dirty, a polluter – well, *I* wouldn’t want to come to the polluting company” (EWs-2). However, four companies did express some concern about getting bad publicity, and a fifth wanted to be seen as ‘responsible’. For example, EOS-11 pointed out that “when they publish in the paper that you’re investigated by the EPA, then you start losing customers” because “they worry that you’ll go out of business”.

V. The Chemical Industry

For chemical companies, the range of motivational drivers at play was much broader than in the case of electroplaters. Our interviewees provided a range of answers to our probes rather than a uniform response. Nevertheless, a number of themes emerge. Not least, there was a marked distinction between the drivers of small and medium sized enterprises on the one hand and of large companies on the other. For example, while sanctions were important for the former, they had little impact on the latter. At the same time, regulations and compliance with those regulations provided the baseline for large companies’ environmental activities,

even though such companies usually went beyond compliance. They did so for reasons that related primarily to risk management and to the perceived need to protect their reputation and maintain the trust of local communities in which they operate.

A. Legal Incentives

Sanctions. Six out of nine chemical SMEs (less than 1000 employees) reported that their behavior had been affected by fines or a jail sentence (Q7). And three out of nine chemical SMEs (about the same proportion as electroplaters) mentioned the possibility of being put out of business by regulatory sanctions, whereas only one large company did so. CWS-9 explained that “Bigger fines have more of an impact [than jail terms] because they can put a small company like ours out of business. If it’s a big company like [X], their legal department could stall the legal action for years. But that isn’t an option for a smaller firm.” Of the seven companies that thought that fines or jail sentences motivated behavior, six were SMEs.

Typical explanations were as follows: “Threats of fines work. In our company we’ve seen penalties in action. Not with our company, but with another company where a company official went to jail. Deterrence is an issue for small companies, not large ones, because the large companies don’t see the regulators.” (CWS-10). “Knowing you *could* get caught changes behavior. We’ve never been in that position. But regulations are always at the back of my mind. It’s naive to think you could release something into the environment without getting caught.” The threat of sanctions was even more important to CWS-7, for obvious reasons: “I believe the threat of going of jail is particularly powerful for our company

because we actually saw someone go to jail...We had an environmental issue in the early 1990s where there was a felony and someone went to jail for what the EPA called a clandestine drum-washing operation” (CWS-9).

In contrast, most large chemical companies (6/9) did not believe that fines or deterrence had an important effect on environmental behavior.

COL-13: “It’s more a reputational issue. There is public scrutiny if you are cited or fined. It impacts your ability to sell your products. In practice, the penalties aren’t significant”.

CWL-6: “Fines aren’t a driving force. They’re minimal. ...I’ve never seen any big ones. It’s the publicity that’s the concern. Because it implies that you are not running the plant well. The general public infers that you are doing things you shouldn’t and they don’t want you in their community”.

Even some senior employees of large firms, however, were mindful that in the event of breach, they might be held personally liable; and this seemingly reinforced their own commitment to compliance. For example CWL-17 “I went to boot camp and they filled us in on all the new regulations we needed to be aware of. What they emphasized is that plant managers are ultimately responsible, whether they know about an infraction or not. They made it clear that pleading ignorance isn’t a way out.”

Companies were asked what might happen if the rules remained in place, but enforcement stopped. Most companies believed that the industry would continue to maintain existing environmental systems “because of institutional momentum. This way of thinking is ingrained in us now” (COS-16). However, they also felt that such continuing compliance would be contingent on the circumstances, and could not be taken for granted “If there were no fines there would be no real hammer. It would be a problem if the only reason to comply was to be a good neighbor and a huge amount of money would be saved. It would change upgrades and new processes going on line. We would operate environmental equipment already in place” (CWL-6).

Regulation and implicit deterrence. Small and medium sized enterprises companies tended to talk about rules and regulations as driving behavior in and of themselves. For example, COS-4 stated that “awareness and strict regulations from EPA and other local and state agencies has improved [environmental performance] way in the right direction.” So too for COS-3, when asked why they had undertaken major environmental improvements conceded: “we probably wouldn’t have looked at it if we hadn’t had the EPA regulations requiring us to report the waste.” For COL-18, “I don’t read about the amount of penalties. I am more concerned about the regulations that got mentioned and whether we are in compliance with those regulations.” As with the electroplaters, there was an implicit recognition that non-compliance would sooner or later result in penalties, but this was not where they focused their attention. On the contrary, what was uppermost in the minds of chemical industry officials was identifying what regulation required of them and doing it. We return to this notion of “implicit deterrence” in the discussion section.

Many of the smaller chemical companies regarded compliance as their principal concern. They had what might be termed a ‘compliance mentality’. Typically, CWS-7 was proudest of: “learning the regulations, because I believe that most companies don’t know what regulations are in place, and what it is they are addressing. Also our company has instituted a commitment to environmental compliance, which is driven from the top”(since an incident where the owner went to jail). Similarly, COS-4, when asked what (in environmental terms) he was proudest of, answered: “Being in compliance with regulations and our remediation efforts... We didn’t just let the waste sit there.”

Larger firms also took regulation seriously and, irrespective of what other environmental initiatives they engaged in, made sure they met the regulatory requirements. Indeed, there were some issues where for them too, achieving compliance was the principal objective. However, larger firms, rather than adopting a ‘compliance mentality’, commonly went substantially beyond compliance, asserting that “Compliance is [only] the baseline” (COL-1) and that “You don’t have a business unless you have compliance.”

CWL-6: “Regulation plays a minimal role. Typically we get inspected. They make recommendations. I’d guess 20% of our improvements are from recommendations-not requirements. Typically we do it for good relations with the regulators. They are relatively easy to accommodate” (see further below).

COL-8: “Did regulation play a role? Not really. We did fine when we implemented Responsible Care. It meant that we were ahead of the regulatory curve. It meant that when a new rule came in and we looked at what we had to do we were often already doing it. It made the challenge of complying with new rules relatively easy to meet.”

COL-13: “The most important thing is our relationship with our neighbors...Methanol is an example. Its regulated as a volatile organic compound- we reduced [emissions] beyond what the regulations require because we recognize it’s a toxic chemical so to address the concerns of neighbors and our own interest in improving local air quality. We focus on it because it’s a toxic chemical we use in the largest quantity.”

Both larger companies and some SMEs tended to talk about how rules affected them economically and how that changed their behavior, and sometimes led them to take actions far beyond compliance requirements (rather than simply focusing on how to achieve compliance).

CWL-6: “It [waste minimization] saved money ... TRI [Toxic Release Inventory] rules play a part in determining the costs”.

CWS-7: “As the regulations increased, it has increased the cost of waste disposal. In turn, this has led us to minimize our waste, through greater pollution prevention planning. Whenever you deal with toxic materials you need to fill out forms, and

since industry is profit driven, needing to fill out forms gives us an incentive to use materials that aren't toxic."

Inspections. Inspectors and inspections, our respondents reported, had relatively little impact on the behavior of chemical companies. Only one chemical company out of 17 mentioned that inspections played a role in why it implemented specific environmental actions, whereas more than a third of electroplating companies specifically mentioned inspections as playing a role. As COL-1 put it: "Regulators? They are there, but they don't pressure us. We haven't had more than 2 or 3 minor notices of violation in the last ten years, but nothing material. They come up about once a year, but we don't get extra visits and we're not under the gun". Similarly, CWL-5 asserted: "there isn't regulatory pressure on us" and for COL-8: "inspections are something we embrace. Ten years ago, responses to having an inspector at your door varied from 'oh no, he's here' to 'hi, glad to see you'. Now we see having an inspector come as an opportunity to build a relationship with the local folks. Having a strong relationship with local agencies is very important, so you can just call up if you identify a problem and say, this is happening, what are we going to do about it."

Certainly inspections had considerably less influence on chemical companies than upon electroplaters. Whether this was also the case one or two decades ago, we cannot be sure. Some companies implied that they would not have achieved their current level of environmental performance had they not been subject to considerable levels of inspectoral scrutiny in the past, often in conjunction with prodding by the trade association, which was galvanized into action by major incidents such as Bhopal and Love Canal.

Legitimacy of regulation. All our respondents suggested that there was a high level of compliance with regulation in their industry. Some referred (in somewhat similar terms to electroplaters) to the moral legitimacy of regulation. For example, for CWL-5: “There are two types of people – the ‘I’ll get by and nobody will catch me type’ - that wouldn’t be tolerated in our company- and the ‘right thing to do /keep in compliance’ type.” COS-3 was influenced by: “an overall company philosophy. Everyone understands what we are committed to, we’re careful about storm sewers, operation, processes, generating dust- and the people responsible for maintenance have to be told why we have it and we tell them what the regulations say and why we do it... we’re committed to doing business in ethical ways and that’s the reason.” CWL-5 asked: “What’s most important? Lots of us live in the area, just being good neighbors, everyone wants to work in a safe environment and to do the right thing for the environment”.

None criticized the need for regulation, and some recognized that it was desirable- “Regulation? -We brought it on ourselves ‘laws don’t fall out of the sky. There were missiles [Bhopal] that prompted the regulations...this is not the way to go.” COL 13: “Government regulations are probably the cornerstone of it and while sometimes we as an industry, and we as a company, don’t see the scientific support for some of the regulations and feel the money could have been better spent, for the most part, these regulations have been very important in improving environmental performance.”

General Deterrence. Responses relating to issues of general deterrence were mixed. In describing why they had taken a *particular* environmental action, not a single chemical company mentioned that they were motivated by an enforcement action that occurred against another company. However, when specifically prompted and asked about the importance of deterrence, most SMEs (6/9) and one (of 8) large companies, felt that hearing about other companies being penalized, was a motivator.¹² For example CWS-10 acknowledged that “the threats of fines work...I realize the likelihood of getting caught probably isn’t as high as it could be. However in our company we have seen the penalties in action, not within our firm but with another company, where one company official went to jail.” The type of penalty was also influential for some: CWS-7 suggested, “fines don’t have that big an impact. However, jail is different because it affects individuals. No one wants to go to jail. I don’t want to go to jail.” However, from their responses, it seemed that it was only if a firm “similar to us’ was penalised, that general deterrence might have an impact upon them.

In contrast, many large chemical companies reported being totally unconcerned with deterrence. For them, the threat of penalties did not hold any fear, because they felt they were comfortably in compliance. For example, COL-1 noted “Certainly upper management is cognizant of potential costs of fines, civil and criminal. They are quite well aware. But the record speaks for itself. We are not even close to that. You don’t even think about that.... And if you do Responsible Care properly, you can’t miss raising the level of consciousness and doing things that maybe have not been done. That’s far more important than the threat of prison.” And even those (predominantly SMEs) who did feel that hearing about others being punished had some influence on their behavior did not place great weight on this as a

motivating factor. As noted earlier (and again below), the regulations themselves were far more important, for reasons unrelated to general deterrence.

B. Economic Motivations

The large majority of chemical companies responded to the economic incentives that regulation and liability rules themselves provided, by engaging in waste-recycling, using less (and less harmful) chemicals, and investing in new production equipment that was simultaneously more efficient and less polluting. The driver for these changes was commonly not a perception of ‘win-win’ opportunities in the abstract, but rather *that regulation had substantially increased the costs of traditional (and more polluting) industry practices*. Responding to the incentive to cut costs, many chemical manufacturers had adopted a range of pollution prevention, reduction and recycling initiatives, thus finding ways in which to conceive of mandated environmental actions as opportunities to achieve economic efficiencies. For example COS-4 described how they evolved a system that avoided flushing and cleaning a tank out every time they changed the color of the coatings they make. This had apparently reduced waste “from hundreds of tons of waste generated for processes to under fifty tons a year”. The reason? “Liability. Every time we generate waste we are responsible for it from cradle to grave. If you minimize it you take the liability away. It has taken us way beyond compliance. ...and it saves unbelievable costs of disposal. We spent close to \$500,000 a year to collect and dispose but now its less than \$50,000 dollars a year.”

Because going beyond compliance often was expected to save them money, large chemical companies (and some SMEs) actively searched such measures, indicating a degree of

proactivity and forward thinking that contrasted sharply with the approach of most electroplaters: So CWL-6 took the view that: “Anything you are discarding hurts the bottom line and if you [minimize waste] you’re not using as many of the bad chemicals. We’ve used elimination and substitution and achieved dramatic drops in the last ten years. Why? Disposal costs have clearly gone up, chemical costs have gone up. The general health of employees.” And for CWS-5: “ If you do an emissions inventory-identify sources and attack it, it’s cost effective. You control and recover products, or you benefit the environment and benefit us in other ways. *If you reduce your impact on the environment there are less regulatory programs that affect you.* You don’t have to comply with more stringent requirements down the track. If you are putting in place new technology it makes sense to look at your emissions and design to minimize at the front end. You reduce your compliance footprint, you go beyond compliance, so you reduce your reporting requirements. That makes life much simpler.” CWL-11 went further. Having developed a new process to meet tougher Californian standards, they discovered this made them considerably more efficient, and, in an attempt to leverage their R&D, exported that practice to their plants in other states even though the latter did not require it. Others sought to use less toxic materials in order to lower their insurance costs.

More broadly, a theme that permeated a number of interviews, particularly with larger companies, was that the industry has gradually learned by doing and improved efficiencies. Certainly concerns about regulation, liability and insurance were important motivators of this improvement, but so too were prompting and prodding from the ACC’s Responsible Care

program (below), information derived from plant managers at sister plants, and occasional feedback from regulators, and interaction with consultants at workshops and seminars.

C. Other motivators

Reputation and Publicity. Larger firms feared the stigma associated with non-compliance, and the damage that adverse publicity might have for their corporate reputation, far more than inspections potential legal punishment. CWL-6 summed this up as follows: “I don’t believe fines are a driving force. They are typically minimal. The publicity is a driving force. It leads the general public to believe you’re doing things you’re not supposed to do. It opens the door for watchdog groups, - you’ve flagged yourself.”

In describing why the industry’s environmental performance had improved (q1), 8/17 chemical companies mentioned reputation or publicity as playing an important role. Of these 8 companies, 6 were large. In contrast, no electroplating facilities identified these factors as important. Similarly, reputation for compliance was not a major concern for small and medium sized chemical companies, which had no consumer brand name to protect and were unlikely to figure in the toxic release inventory.¹³ As CWS-5 pointed out: “ We are in an industrial area: We don’t affect any individual to speak of. We don’t impact on our neighbors. We are a fragrance plant - we tend to smell pleasant!” And for CWS-7: “Nobody knows us so there isn’t much of a reputation to preserve.”

Yet at facility level, maintaining the trust of the local community was commonly cited as a high priority. For example, for COL-2 it was “the people 300 yards outside the perimeter

fence” that were their main concern, and “the right thing to do is to operate the facility with someone who has kids downstream [in mind]. We’re going to be a good corporate neighbor - we’re not going to cause them harm by either acts of omission, commission, or catastrophic events.” Similarly for COL-1: “Everyone at the plant is very concerned about our neighbors. We strive our best not to do anything to draw complaints. We want to stay here and we want to be here for another hundred years. Since the plant is stuck in the middle of a city - we are three blocks from city hall - we don’t need complaints. You do whatever you need to do to keep them happy. I don’t want to have to explain to a mother down the street why her five year old is sick and that its my fault.”

For reputation sensitive companies, the risk of negative publicity was a particular focus. First, it could affect a company’s relationship with the local community. This in turn that could threaten the very existence of the facility, since the community might successfully oppose or delay permit permissions, or otherwise block expansion plans or proposed technological change at facility level. One way or another, facilities whose existence was seen as illegitimate by the local community faced ‘being regulated to death’.¹⁴ As COL-1 put it: “We’ve got agencies, we’ve got neighbors, it takes years to built up so that people talk positive about you- the city, the emergency crews, the fire department, but once you build that, those people will answer the questions. Maintaining trust is the key—they trust you if I say something and I don’t get questioned.”

Second, negative publicity could effect a company’s relationship with its customers, suppliers, and regulators, and thus its bottom line. COL-1 summed this up as follows: “It’s

more what comes with the fine - the publicity - you potentially lose customers if they find that there has been a serious fine. Customers now more than ever want environmentally responsible suppliers - that's one of the questions they ask - and those things really can hurt a company." Why? "They realised they don't need the embarrassment and the media issues. The people at the top won't tolerate violations and potential litigation. It can be managed. You don't have to spend on lawyers to bail you out."

In order to meet these broader societal expectations and to protect corporate reputation, larger enterprises often found it necessary to go 'beyond compliance'. For example, COL- 1 emphasised that what underpinned decision making in his company was not regulation but prudence: "You look at the situation, you don't look at the law. The law's a given." Prudence implied strategic judgment in the light of stakeholder pressures. For example: "We ship our hazardous waste off site. We could make a case that only a portion of it is really hazardous but there's some risk if it goes wrong. I haven't looked at the cost but cost is not part of the calculation." For facilities with emissions above Toxic Release Inventory thresholds, the fact that information about levels of chemical emissions was widely available was also a significant driver of beyond compliance behavior.

Environmental groups, however, were reported as having no significant influence on behavior for either smaller or larger enterprises. Very little pressure appeared to have been exerted by such groups. They were not seen as a threat by any of our respondents. Small enterprises were likely to go completely unnoticed by such groups and large ones often took the view that they had nothing to fear: "They have no direct influence. If we are in or beyond

compliance then what can they ask? And we keep low key” (COL-1). Although for COL-2 “knowing we might have to answer to them and they might knock on our door influences our thinking and the way we design our operational systems.”

Management Style. Management style and corporate values had a significant influence on the behavior of large companies in a way that was not apparent with SMEs. In describing why the industry’s environmental performance had improved (Q1), 7/17 chemical companies mentioned management commitment, attitude, or management systems as playing a role. Only one electroplating company made any such mention. In addition, almost half the large chemical facilities (8/8) mentioned the role of internal management attitudes (for example, considerations of internal corporate philosophy) in their decision to take particular environmental actions (Q2-4), whereas one of nine smaller chemical companies did so. Those with international ownership were particularly striking in this regard. For example COL-16 told us that “a lot is due to the German [owners], as they have a great safety record and don’t mess around with human safety...Top management wants it that way.” However, a somewhat similar proportion (4/10) of larger (between 30 and 120 employees) electroplating companies also thought management was an important factor in their decisions to implement particular environmental actions. Thus, overall, management style appears to play a more important role in the chemical industry than it does in the electroplating industry, and in both industries, management style appears to play a more important role in larger companies.

Trade Association. Approximately one third of the chemical companies told us that participation in the American Chemical Council’s Responsible Care program structured

many of their environmental initiatives. Seven of seventeen chemical companies we spoke to attributed the industry's environmental improvement in part to this trade association driven initiative: for example, according to COL-8: "The Responsible Care program that CMA put together dovetailed well with what we felt we needed to do...It allows you to apply the things you are supposed to do. It's an umbrella. It makes your philosophy tangible by establishing norms, procedures and channels to reach goals."

COL-1: "The American Chemical Council has had a tremendous effect - not so much enlightening large firms - they were in line anyway and have the systems in place - but they got the smaller guys' levels of consciousness raised..."

COL-13: "As a member of ACC, we have an obligation to implement Responsible Care. That has also been a driving force for us....Responsible Care's Pollution Prevention Code mandates goals for reducing environmental impact. We measure the impact and perform against goals."

On the other hand, for the most part, only larger companies in our sample were members of Responsible Care. And separating the rhetoric from the reality was difficult. A number of companies began the interview by citing the virtues and influence of Responsible Care, but when asked about what drove specific environmental initiatives, Responsible Care was rarely mentioned.

Supply chain pressure. Small and medium sized enterprises, but not large ones, spoke of pressures they experienced from their larger trading partners to improve their environmental performance. For example,

COS-4: Reputation is a significant concern. Our clients are the government and Boeing. Image is very important. We sell our products as environmentally friendly.

COS-14: Our clients are corporate water plants and their public image is very important to them.

The other side of this coin, a number of the large companies in our sample spoke of monitoring the environmental practices of their smaller trading partners. Typically, COL-16 asserted that they “will not conduct business with companies who have questionable practices. We audit all our vendors who supply us with chemicals and verify to make sure they don’t do anything questionable. Moreover, we audit our customers to make sure that the chemicals we produce don’t end up in the wrong hands.” CWL-5: “There are certain companies we won’t deal with because of their environmental policies – because of the risk.”

VI. Discussion

In the light of our findings, we return to the basic research questions raised at the beginning of this paper. In stimulating compliance by regulated businesses, how salient are the “explicit general deterrence” messages sent by formal legal sanctions against other firms, compared to (a) the “specific deterrence” engendered by inspections of and legal sanctions against the

firm itself; and (b) the “implicit deterrence” message sent simply by the dissemination of governmental regulations? Compared to legal deterrence, how salient are other factors – such as the threat of informal economic and social sanctions, or normative commitments to compliance with laws and regulations - as stimuli for compliance efforts? And do motivations vary -- depending for example, on the type and size of organization (Gray & Scholz 1991), or the characteristics of particular industry sectors?

Specific deterrence. Specific deterrence in its narrowest sense – previous sanction against a company inclining it to make more strenuous efforts to avoid future penalties – had a significant impact on a substantial minority of companies in our sample. Twenty-four per cent (4/17) of electroplaters and 11% (1/9) of chemical SMEs said that a legal penalty against their company in the past had influenced its subsequent environmental actions. But the large chemical companies in our sample, who reported having had only minor violations over the last decade, had experienced no significant enforcement. For them, therefore, specific deterrence was not a salient driver of environmental actions (Q2-4).

Specific deterrence in its broader sense also includes the impact of inspections (with their implicit threat of sanctions). For electroplaters, inspections played an important role, prompting them to undertake whatever action was required of them in the belief that further enforcement action, with potentially profound consequences, would have followed from continuing non-compliance.¹⁵ Inspections also had an important “*reminder function*” for firms inclined to comply because it was the ‘right thing to do.’ Again, however, chemical companies said that inspections did not have a significant influence on them; only one

identified inspection as an important reason for taking particular environmental actions. Most stated that they were already substantially beyond compliance, and so inspections held no fear for them.

Explicit General Deterrence. Knowledge about legal sanctions against other companies, according to our interviews, played only a very modest role in the case of electroplaters and an even smaller one for chemical companies. In the case of the former, only 12% (2/17) said a fine or prison sentence at another company had influenced specific environmental actions (Q2-4). Only 1/17 saw general deterrence as a powerful motivator for specific actions; 11/17 saw it as a relatively unimportant motivator. Among chemical SMEs, no one identified an environmental action that occurred against another company as having influenced *particular* environmental actions in their facilities. However, when prompted, many felt that hearing about another firm being penalized *might* influence them if the circumstances were sufficiently similar. Large chemical companies reported that they were not at all influenced by such considerations.

There seem to be three reasons why the impact of explicit general deterrence was small. First, companies had great difficulty comparing their own circumstances with those of the company that had been penalised, and most commonly dismissed the latter as being irrelevant (see also Braithwaite & Makkai (1991)). Second, the very large majority of our respondents were in compliance and an increasing number are going beyond compliance. In these circumstances, hearing about punishments imposed on recalcitrants did not resonate with their own circumstances and held little fear for them. Third, the type of penalty imposed

was important; some respondents suggested that it was only hearing about someone in similar circumstances going to prison, rather than merely being fined that would influence them.

However, explicit general deterrence did play a significant *reminder function* for both electroplaters and chemical companies - prompting them to review their own operations and think about environmental risks that otherwise might not have gained their immediate attention. Nevertheless, few reported making any significant changes as a result of such a reassessment.

Explicit general deterrence also fulfilled a *reassurance function*. Many respondents conceded that without effective enforcement, the overall performance of the industry would decline over time, as compliant firms would lose confidence that there was a 'level playing field' in terms of environmental standards. Many respondents placed considerable emphasis on this function, as complaints about enforcement commonly focused on the injustice of others *not* being punished, or not being punished heavily enough.

Implicit General Deterrence. What we have called "implicit general deterrence" – the threat of legal sanctions implied by the mere promulgation or history of enforcement of laws and regulations in the contemporary United States – was much more salient for our respondents than either specific deterrence or explicit general deterrence. Although many of our respondents acted for instrumental reasons, they did not seem to engage in any careful weighing of the benefits of non-compliance versus the probability of being discovered and

punished, as predicted by traditional deterrence theory. On the contrary, almost all our respondents gave the impression that there was no point even debating whether to comply or not. Compliance was regarded as mandatory. Legal punishment of serious violations were seen as virtually inevitable by electroplaters and chemical SMEs. Electroplaters voiced this sense of most strongly, which may reflect enforcement actions these facilities had experienced in the past: 8/17 electroplating companies mentioned previous violations, fines, jail sentences, or threats of facility closure. Every electroplating facility was regularly inspected at least once a year: by the local sewer district if they had a discharge to the sewer, by the fire department, and by state and federal environmental agencies. However, even smaller chemical companies (another industry subjected to substantial regulatory scrutiny and penalties in the past) commonly voiced a similar view.

This sense of regulatory inevitability was reinforced by the widespread perception among respondents that it was firms “like theirs who were most vulnerable to inspection and enforcement. Thus large firms believed that small firms were ‘getting away with it’ while they themselves were not,¹⁶ while the converse was the perception of small enterprises”.¹⁷

Our interviews indicate that “implicit general deterrence” arises from the general history of a particular regulatory regime (in this case targeted enforcement over the previous decade). In these industries inspection and enforcement activity have generated a ‘culture of compliance’, such that it becomes almost unthinkable to regulatees that they would calculatedly (as opposed to inadvertently) break the law. Most¹⁸ of our respondents took a similar view to EWs-7: “It’s ludicrous to let things go and imagine you won’t get into

trouble...We are subject to inspection and to fines, huge fines, for not doing it. You can't fight that. You either comply or get out of the business." Thus it was *the regulations themselves* (rather than hearing about enforcement actions against other firms) that had the most direct impact on behavior. Rather than simply providing a threat, the regulations (as well as inspections) act as a reminder to enterprises as to what is required of them. But that occurs against a backdrop where the common perception was that 'you go out of business if you don't comply.'

Indeed, for many interviewees, the regulations had become so embedded in their culture that they exerted an almost unconscious influence on decision-making. Some respondents attributed legally required environmental steps at their facilities not to regulation but to the firms' environmental ethos, seemingly oblivious to the extent to which they operated in a thick regulatory soup which constrained many of their choices.¹⁹

For large chemical manufacturers, however, the mechanisms that led to compliance were rather different. Such firms commonly described regulation as only 'the baseline,' implying that it was a taken-for-granted minimum standard which they would usually substantially exceed for a variety of reasons discussed below. For them, regulation was taken for granted not because of the perceived inevitability of sanctions (that is, implicit general deterrence) but because they felt a failure to comply would send very undesirable signals to important stakeholders, triggering a variety of informal sanctions. Yet the law was seen as a moral barometer of acceptable behavior in the minds of their investors, employees, customers, and local governments, and hence they had to attend closely to legal compliance. Whether

regulation would have a much greater role for large companies facing economic hard times, who are cash-strapped and short-term in their approach, we are unable to say.

Normative factors. Strikingly absent from our interviews were diatribes against regulation in general or the unreasonableness of particular regulatory demands. On the contrary, almost half the electroplaters and chemical companies in our sample professed to comply not for instrumental reasons (including deterrence) but rather because it was the ‘right thing to do’. This civic responsibility explanation of compliance was an important theme that permeated many of our interviews. A substantial number of electroplaters, for example, indicated that, now being aware of the environmental consequences of their actions, a return to the egregious pollution of earlier decades was almost unthinkable, even in the absence of regulation and its enforcement.

Interviewees tended to divide the world into two types of people, ‘good guys’ (like them) who obey the law voluntarily, and ‘bad guys’ who don’t. Two things followed from this. First, regulation served a *reminder function* as to what it meant to be a good guy: a predisposition to ‘do the right thing’ was tightened or brought into focus by the introduction of specific regulation. Thus regulation had an important normative as well as economic function – you can’t be a good guy and remain calculatedly non-compliant. For good guys, inspections often served a reminder function, reinforcing, through instruction and education, what could reasonably be expected of them. Second, regulation served a *reassurance function*. Since they believed bad guys would cheat if possible and thereby gain an unfair business advantage, our respondents indicated that they would be far less inclined to

voluntary compliance if others were perceived to be “getting away with it.” The sanctions imposed on others provided a reassuring backdrop to their own decision-making. Thus voluntary compliance is likely to be greater where enterprises believe not only that the rules are fair but also that they are fairly applied (Burby & Paterson 1993).

This ‘level playing field’ argument was less common amongst chemical companies. Many of the larger companies identified senior management commitment as a major reason for improved environmental performance without any intimation that this might be contingent on what others were doing. The Responsible Care program was regarded by many as the vehicle which had sensitized not only large, but more recently, smaller companies to their environmental obligations, while also providing a vehicle through which they might strive for continuous improvement. In neither case did respondents express reservations based on the performance of other companies. This is perhaps understandable given the importance which they placed on protecting their “social license,” (Guingham et al. 2003) which they needed to do irrespective of how others behaved.

Overall, the evidence on normative considerations casts doubt on the assumptions of explicit deterrence theory, at least for those who perceive themselves as ‘good guys’. This group did not behave as amoral rational actors; instrumental considerations (weighing up the chances of detection and likely penalties) were not the primary motivator. Deterrence was important at least for electroplaters and smaller chemical companies, but primarily by reassuring them that ‘bad guys’ would be caught. For those who might be tempted to become bad guys, deterrence, particularly implicit general deterrence, played a much more important role.

Social pressures. For small electroplaters and small chemical companies, informal pressure, such as that which might be brought to bear by local communities or local community groups, or by local or national environmental groups, had very little or no impact on their behavior. Smaller businesses perceived themselves (accurately it would seem) as being ‘beneath the radar’ of community or environmental activists, and as facing no significant threat from such groups. Only a minority expressed any concern about adverse publicity.

In marked contrast, for larger chemical corporations social pressures, concerns about protecting their reputation and avoiding bad publicity were the primary drivers. Regulation was important, but mainly because of the stigma associated with being sanctioned. Violations of their ‘social license’, they believed, could damage their relationship with local communities, and even the public at large, and in so doing could result in serious economic damage. For example, it might undermine their ability to obtain necessary approvals for plant expansion or technological change. Such violations could also threaten their relationships with regulators and other important stakeholders.

The reasons for this marked difference in approach between the two industry sectors likely lie not only in differences in size (large chemical companies are vastly larger than ‘large’ electroplaters), sophistication and visibility, but also in the profiles of the two industries. The chemical industry has experienced a number of dramatic, highly visible and serious environmental accidents – Bhopal being the defining event. Its reputation has also been seriously tarnished by the dumping of toxic chemicals – Love Canal being the most well

known example. These incidents were mentioned in a number of interviews, and, although they took place many years ago, have clearly left their mark, both on individual companies and on the industry association. Essentially, the chemical industry, like the tobacco industry, has direct intimations of what it means to lose (or almost lose) its social license. Thus, like nuclear power companies in the wake of the Three Mile Island incident, chemical companies feel themselves, in Joseph Rees's (1994) apt phrase "hostages of each other."

Economic pressures. Amongst electroplaters, 40% of larger facilities attributed improvements in industry environmental performance, in part, to economic incentives. And 80% of all electroplaters attributed some particular environmental responses actions, in part, to economic drivers. However, small electroplaters, when asked in broader terms about influences on their behavior, almost invariably identified regulation, not financial savings, as the principal driver of environmental improvements. In the case of chemical companies, economic incentives were substantially more important, with 53% (9/17) identifying this as an important motivator for environmental improvement in the industry.

For the most part, however, although companies tended to speak of environmental investments made to save costs, on closer scrutiny most changes they described were driven by the costs imposed by regulation or liability rules. Large chemical companies were distinctive in the extent to which they devoted energy to anticipating and finding ways to minimize such costs. Thus their approach was not merely to comply, but to comply in the least cost way, and ideally to save money by pollution prevention planning or other means. The focus of such companies on risk management also led them to actively seek out

mechanisms to reduce risks, often in ways that took them substantially beyond compliance. In contrast, few electroplaters perceived the possibility of ‘win-win’ opportunities likely to result in both environmental improvement and economic benefit. As a result they did not seek out such opportunities and remained almost entirely reactive, benefiting sometimes from initiatives required of them by regulation, but rarely taking the initiative.²⁰ And overall, environmental performance was seen as costly, not profitable. Hence external pressures, particularly regulation, and to a lesser extent, the normative concern to ‘do the right thing’ were the dominant drivers of environmental improvements.

Supply chain pressure was also important, at least for those small electroplaters who dealt with large customers whose own environmental credentials were important to their business success. The latter commonly insisted that their smaller and weaker trading partners comply with specified environmental criteria as a condition of the contract of supply. Small electroplaters had little alternative but to conform to such conditions. Outside of these circumstances however, electroplaters sold on price and quality alone, and their customers had no impact on their environmental behavior. In contrast, small and medium sized chemical companies experienced similar pressures almost across the board, because their larger trading partners (primarily large chemical companies) were themselves vulnerable to environmental pressures and insisted on environmental credentials in their smaller trading partners as a matter of risk management.

VIII. Conclusion

In the United States, deterrence lies at the very heart of regulatory policy and its enforcement. Yet amongst electroplaters and chemicals companies, neither of the two conventional forms of deterrence played a major role in shaping corporate environmental behavior. Certainly specific deterrence in its narrow form (as punishment) had a significant influence on the future compliance of those who were subject to it, but less than a third of respondents mentioned such influences. And general deterrence was reported to have had only a very weak influence on the behavior of electroplaters, and an even weaker one on chemical companies. However, general deterrence did serve as a *reminder* to firms about issues that might otherwise not have gained their attention (even though it rarely influenced their actions) and as a *reassurance* that others were not ‘getting away with it’ while they spent money and energy on costly compliance measures.

Of far greater importance than either specific or general deterrence was what we term ‘implicit general deterrence’, a category not recognized in the policy literature. We were struck by how many of our smaller respondents failed to engage in detailed calculations as to the likelihood of detection or the severity of punishment of the type predicted by deterrence theorists.²¹ Instead they appeared to use general rules of thumb: you will get caught, the penalty could put you out of business, resistance is futile. We concluded that the overall effect of sustained inspection and enforcement activity has been to inculcate a ‘culture of compliance.’ Thus it was *the regulations themselves* rather than enforcement action that

currently had a direct impact on behavior. Rather than simply providing a threat, regulations and inspections acted as a reminder to enterprises as to what was required of them.

Yet instrumental considerations, even in the more complex form of implicit general deterrence, were not the only ones that weighed upon our respondents. Almost half, our respondents also provided a range of normative explanations for why they complied. In essence, many of them perceived themselves as ‘good guys’, complying with environmental regulation because it was the right thing to do. However, they struggled to disentangle normative from instrumental motivations, and wrestled with the temptation to backslide when environmental improvements proved expensive. In the absence of regulation and implicit general deterrence, it is questionable whether their good intentions would have translated into practice.

In any event, deterrence in any form was of far greater concern to SMEs than it was to large ones. For major reputation-sensitive firms in the environmentally sensitive chemical industry, regulation and its enforcement played only a minor role (‘as a baseline’) and most chose to go substantially beyond compliance for reasons that related to risk management considerations and to the perceived need to protect their social license to operate. Crucial in this regard was maintaining the trust and support of local communities, of avoiding the attention of environmental groups and other potentially critical stakeholders, and of preserving the company’s reputation as an environmentally responsible entity.

Large companies could also be distinguished from the smaller companies in terms of *how* they went about complying or over-complying. They treated regulation and liability rules as sources of substantial additional costs, and hence as economic signals – to which they responded by seeking out and often finding solutions that substantially mitigated those costs and occasionally even saved them money overall. In this regard, they were proactive and innovative in a way that boundedly-rational small companies, particularly electroplaters, most certainly were not.

Thus there are various strands that must be taken into account in understanding what motivates corporate environmental behavior. Importantly, many, but not all of these strands are interwoven. There is a tight coupling for example, between normative and instrumental explanations for compliance. Even those who see themselves as ‘good guys’ and who comply because it is ‘the right thing to do,’ suggest they would be reticent to do so if they are not confident that the ‘bad guys’ are being effectively regulated and sanctioned. Similarly, there is a connection between informal social pressures and formal legal ones. Thus the law is seen by many (including local communities) as a moral barometer, and any company found in non-compliance risks not only legal sanctions but the informal stigma and reputation damage that the community and other stakeholders may inflict.

Finally, how these various strands play out depends very much on the size and sophistication of companies themselves and on the characteristics of the industry sector within which they are located. Electroplaters responded very differently to various external drivers than did chemical companies, and even within the latter, small and medium sized companies were

influenced by substantially different considerations from large companies. Overall, there was little support for models of business firms as “amoral calculators,” who carefully weigh the certainty and severity of sanctions and who can be manipulated through a judicious mix of specific and general deterrence.

NOTES

1. The adversarial, legalistic style of American regulatory agencies can be contrasted with the more conciliatory, compliance oriented approach taken almost all other Anglo-Saxon countries. See for example Kagan (2002).
2. See for example, Becker (1968), Stigler (1970) and Miller & Anderson (1986). There is empirical as well as theoretical support for this deterrence-based theory of compliance. According to Regens et al. (1997), "We also find that pollution control investment is positively related to the EPA enforcement budget, suggesting at the very least the industries believe that the EPA will increase its investigatory efforts as their budget increases."
3. Kagan, R. et al. In Hawkins and Thomas (1984). In terms of the management literature, the rational actor model is closely associated with the strategic planning school approach. The latter too, assumes that managers act according to a fairly narrow economic calculus, that they are able to obtain near perfect information both about their own organization and about the wider economic and business environment, and that they have very considerable discretion in how they implement their preferred strategy within the organization. Whittington (1993).

4. For example, the perceived risk of detection is more important than the perceived likelihood and severity of sanctions. Perceived informal sanctions seem to have a much stronger effect than formal sanctions. See Burby and Paterson (1993):753-772; Gray and Scholz (1991):185-214. Braithwaite and Makkai (1991):7-40 found very little deterrent impact of inspections or sanctions in the case of nursing home regulation, and Winter and May (2001):675-98, found that normative and social motivations were as important in affecting compliance as are motivations based on expected utility and deterrence. For an excellent review of the economics literature see Cohen (1998).
5. A literature review is contained in our companion paper, also in this Special Edition. See Thornton et al. (2005). For a general review see OECD (2000).
6. With regard to the Ohio Electroplaters, 22 were contacted with 9 refusing, 8 accepting to participate and 5 where the researchers never connected despite numerous attempts with the environmental manager. For the Washington electroplaters, 25 companies were contacted, with 5 of them failing to meet our criteria, 10 of them refusing to participate, 8 of them completing the interview, and two proving too difficult to connect with the environmental manager. For the Washington chemical companies, 28 companies were contacted, with 7 of them failing to meet our criteria, 6 refusing, 8 participating, and 7 others where it proved too difficult to connect with the environmental manager. For the Ohio chemical companies, 26 companies were contacted in all, with 8 of those failing to meet our criteria, 8 completing the interview, and 10 refusing to participate. The facilities were chosen in order to ensure that the sample included respondents from urban areas

(Seattle and Spokane in WA, Cleveland and Cincinnati in OH as well as rural areas; companies that operated a number of facilities in a number of states as well as those that operated only a single facility; and companies that ranged significantly in size from mom-and-pop operations to multinationals. Response rates were 36% (8/22) for WA electroplaters, 45% (9/20) and for OH electroplaters. The most common reason given for non-response was lack of time to participate in a 1-hour interview. Response rates were 38% (8/21) for WA chemical companies and 56% for OH chemical companies (10/18).

The non-respondents do not appear to have been disproportionately “bad apples”; nor were the respondents disproportionately “good apples.” Using the EPA’s “ECHO” on-line data set (http://www.epa.gov/echo/compliance_report.html), we found that in 2002-03, the average “quarters in noncompliance” (according to government inspectors) for electroplaters in our Washington sample was 1.38; for Washington electroplaters who declined to participate, the figure was 1.25, slightly less. We also compared electroplaters in our Ohio sample with all Ohio electroplaters in the EPA database, and the average quarters in noncompliance for both groups was virtually equal. Respondents in Washington more often were larger firms than were non respondents (which nevertheless were slightly larger, on average, than the industry norm). But in Ohio respondents were about the same size, on average, as the industry norm, according to the EPA data set.

7. In this regard, Thornton et al. (2005), revealed that electroplaters were likely to assess the probability that fines might lead to facility closure, as far higher than those of

- other sectors and that they had a much higher risk perception that an owner/operator would be incarcerated for a serious offence.
8. For a description of a 1999 EPA-supported benchmarking report that surveyed the range of environmental performance for the electroplating industry see *Benchmarking Environmental Performance in the Strategic Goals Program* <http://www.sectorstar.org/sector/MetalFinishing/index.cfm>.
 9. The substantial improvement in the environmental performance of chemicals industry is also supported by hard data. See annual Toxic Release Inventory data relating to the chemical industry reported annually on the American Chemicals Council website www.americanchemistry.com
 10. See Startrek, *The Next Generation* www.startrek.com/startrek/view/series/TNG/
 11. Of course, water, sewer and waste disposal charges may have increased not due to market forces alone, but due to regulations affecting water suppliers, sewer treatment plants, and waste disposal facilities.
 12. Particular environmental actions refer to respondents' answers to Q2-4 which asked which environmental actions they were proudest of, which were most important, and concerning crucial day-to-day actions and did not prompt respondents to consider the role of deterrence. Prompted questions regarding deterrence refer to respondent's answers to Q7-9 in which they were specifically asked to address issues of deterrence.
 13. The levels of chemicals released by SMEs are likely to fall below threshold levels required for TRI reporting.
 14. For a similar account of such "social license" pressures in the pulp manufacturing industry see Gunningham et al. (2003).

15. The finding that inspections alone (without some significant form of enforcement activity) influenced compliance levels seems contrary to the findings (based on detailed statistical analysis with large samples) by Gray and Scholz (1991). However our finding must be interpreted in the broader context of a high level of enforcement in the electroplating industry in the past, which had given rise to a pervasive belief in the inevitability of enforcement action in the longer term and the assumption that 'you either comply or they shut you down'.
16. For example, according to EO1-4 "they are not hitting the small companies - we dug up on the internet where our competitors stand - we see from the EPA site, they are targeting larger companies. Small companies are under the radar - larger companies have a higher profile and more visits and chances of getting caught."
17. For Ews-6 "the fines are pretty significant but the big guys feel no one can mess with them - the regulators wouldn't monkey with the aircraft industry."
18. Indeed, 60% of electroplaters felt the only choices were comply or shut down.
19. For example, COS-3, attributed her firm's improved environmental performance to an ethical commitment and to the influence of the American Chemical Council's Responsible Care voluntary initiative. However, her firm's most important environmental actions seemed to be shaped by neither of these considerations but rather, albeit subtly and indirectly, by regulation. Thus waste reduction and recycling, avoiding groundwater contamination, and containment of storage tanks were identified as the firm's most important environmental priorities. But in each case, although our respondent did not point to this, their actions had been influenced by regulation. Waste, she acknowledged, 'had to be reported to EPA' and their waste

reduction initiatives coincided with changes in EPA rulemaking. Moreover, the consequences of groundwater contamination were expensive precisely because regulation make them so, and notwithstanding that she asserted that ‘the regulations had no relevance’ to their storage tanks initiative, that initiative also coincided with the requirement under the UST regulations, to complete a major upgrade over a ten year period. Similarly, “In my three years I haven’t seen an authority figure,” asserted E1 when asked about the impact of regulation. But he then went on to mention that “the city guy [the sewer authority] comes around once a month but not others. He keeps track and does a one-year write up and looks at everything. And the fire department comes once a year, but that’s it.

20. Supply chain pressure was also important, at least for those small electroplaters who dealt with large customers whose own environmental credentials were important to their business success. The latter commonly insisted that their smaller and weaker trading partners comply with specified environmental criteria as a condition of the contract of supply. Small electroplaters had little alternative but to conform to such conditions. Outside of these circumstances however, electroplaters sold on price and quality alone, and their customers had no impact on their environmental behavior. In contrast, small and medium sized chemical companies experienced similar pressures almost across the board, because their larger trading partners (primarily large chemical companies) were themselves vulnerable to environmental pressures and insisted on environmental credentials in their smaller trading partners as a matter of risk management.

21. The objective deterrence literature assumes that the actual threat of punishment certainty associated with committing a crime and the degree of severity will affect some objective measurement of crime. See Paternoster and Zimring (1978) In Blumstein et al. (eds) (1978).

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