

# **Information as a Policy Instrument in Protecting the Environment: What Have We Learned?**

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# **Information as a Policy Instrument in Protecting the Environment: What Have We Learned?**

**Mark A. Cohen<sup>1</sup>**

## **I. Introduction**

Since the introduction of the Toxic Release Inventory (TRI) in 1988, there has been considerable interest in environmental information disclosure as a possible complement or substitute for traditional forms of regulation. Among the most important reasons for this growing interest: (1) the TRI program led to a significant voluntary decrease in the total amount of TRI chemicals released in the United States – beyond any mandated levels, (2) information disclosure programs serve another very important social function – they satisfy the belief that the public has a ‘right to know’ that they might be affected by third party pollution, (3) new information technologies (both hardware and software) that facilitate the dissemination of environmental information in a meaningful way, (4) the fact that these programs are generally thought to cost the government far less than drafting and implementing industry wide regulations, and (5) these approaches are often politically more feasible to adopt since they are generally framed as “right to know” laws and thus not easily characterized as coercive new regulations.

The purpose of this paper is to explore the policy implications of our recent experience with environmental information disclosure programs. First, I examine what

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we know and what we don't know about environmental information programs. Next, I consider several different types of policy initiatives. In each case, I examine what lessons we have learned to date that should help inform the debate over any future proposed initiatives. Finally, I identify important areas of research that will help policy makers design better programs in the future.

## **II. What Have We Learned?**

Although we have learned much from the existing programs that have been implemented – both in the U.S. and abroad, there is still much to learn about the efficacy of environmental information disclosure programs. This section focuses on what we have learned and also identifies some of our knowledge gaps.<sup>2</sup> A subsequent section will discuss major outstanding issues that would benefit from further research.

### **1. Information Disclosure Programs Affect Firm Behavior**

Empirically, it has been shown that mandatory disclosure programs such as TRI can have a significant effect on the environmental performance of firms. What is not fully understood, however, is the mechanism by which these programs induce firms to voluntarily reduce emissions beyond any legal requirement. For example, when the first such disclosure of TRI was made, there was a significant reduction in the market value for some publicly traded firms.<sup>3</sup> Subsequently, firms dramatically reduced their

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<sup>2</sup> Much of this section is based on the findings of a National Summit on information disclosure programs held at Vanderbilt University on March 3, 1999. See Abkowitz et al. (1999). Also, see Cohen (1999) and Cohen (2000) for further elaboration on both the underlying theory and empirical findings of studies to date.

<sup>3</sup> See Hamilton (1995).

emissions. However, the emissions reductions were not uniformly distributed across firms. One study found that firms with the largest negative abnormal stock price returns upon the initial announcement of TRI were the firms that reduced emissions the most.<sup>4</sup>

Thus, the important question remains as to why information disclosure may affect both stock prices of publicly traded companies and ultimately emissions of all firms subject to disclosure. Information about a firm's environmental performance – whether good or bad - may be of interest to shareholders or lenders for a variety of reasons. To the extent that the information concerns monetary sanctions or an announcement of an agreement to spend money on new pollution control equipment, we might expect these monetary outlays to reduce the expected value of the firm, thus reducing the share price and/or bond rating of the firm. It may also give lenders pause about risking more capital on that particular firm. Other costs of “bad information” might include future debarment from government contracts, targeted enforcement by EPA,<sup>5</sup> and lost sales to ‘green consumers.’ Some socially conscious investors might even shun the firm's stock, thereby depressing its value. Finally, it is possible that investors will update their assessment of the quality of management in the firm and view this information as a signal that the firm is not as well managed as they thought.

Aside from the stock market, there are other mechanisms through which information disclosure programs might ultimately result in improved environmental

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<sup>4</sup> Konar and Cohen (1997).

<sup>5</sup> This is an important point that should not be lost in the discussion on information disclosure programs. There is sound theory and empirical evidence suggesting that targeted enforcement can be a cost-effective method of improving compliance. Giving firms that have high ratings on environmental performance indicators preferential treatment allows regulators to spend their time where it will have the most ‘bang for its buck,’ while providing a positive incentive for firms to earn that preferential status. Thus,

performance. In particular, there is empirical evidence that informal community pressure and social norms may play an important role in emissions and/or compliance. Not surprisingly, the ability of communities to play this role is an increasing function of income and education level.<sup>6</sup>

Why do we care “how” information disclosure programs ultimately result in improved environmental performance as long as they do? The answer is that we cannot assume the success of one program is transferable to another program unless we understand the mechanism by which the first program succeeded. For example, several recent studies have focused on “bad” environmental news in the U.S. and Canada, such as oil or chemical spills or the announcement of civil or criminal enforcement actions.<sup>7</sup> These studies generally demonstrate a negative stock price effect from the release of bad environmental information – causing many to argue that firm reputation is hurt by these events. Assuming firm reputation is harmed by this bad news, it might be assumed that this will ultimately have a deterrent effect on firms and cause them to improve their environmental performance not wishing to further harm their reputation. Given our experience with TRI and the fact that firms hit with large stock price declines subsequently improved their environmental performance, one might conclude that a policy publicizing such negative environmental events will have a significant effect on future compliance and emissions. Although an attractive argument, there is little data to support the existence of such a “reputation effect.” Indeed, several recent studies suggest

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information disclosure programs might be used strategically as a complement to existing regulatory requirements.

<sup>6</sup> See Hettige et al. (1996), Arora and Cason (1996), Brooks and Sethi (1997), and Konar and Cohen (1998).

<sup>7</sup> See for example, Muoghalu, Robison and Glascock (1990); Lanoie and Laplante (1994); Klassen and McLaughlin (1996).

that no such effect exists, and that the negative stock prices we often observe are simply the market's expectations about the size of any government imposed penalties, cleanup costs, etc.<sup>8</sup> In other words, once you take into account the additional out-of-pocket costs, there is no additional reputation loss. Whether such negative publicity hurts the firm's reputation enough to affect their behavior is thus not yet a settled issue, and further research and experience with such programs are needed. Thus, one cannot simply look at the experience of TRI – which clearly caused firms to improve their environmental performance – and assume that other disclosure programs will have the same effect.

## **2. Information Disclosure Programs Empower Local Communities and Other Stakeholders**

The increasing availability of environmental information has permitted stakeholder involvement to take on new, expanded roles. At the facility level, information can help empower a local community to take actions such as opposing a new permit or zoning application or beginning a meaningful dialogue on issues of concern with nearby industrial facilities. Not all of this increased empowerment is necessarily negative from the company's perspective, as good environmental citizens can also potentially reap the benefits of a supportive community. Environmental information disclosure programs also allow for more informed debate in the area of environmental justice. At the corporate level, various stakeholder groups have exerted pressure on firms to reduce emissions beyond their legal requirements and to adopt better environmental management programs.

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<sup>8</sup> See Karpoff, Lott and Rankine (1999) and Jones and Rubin (1999).

### **3. Information Disclosure Programs can Increase Cooperation between EPA and Regulated Industries**

Many of these environmental information disclosure programs involve new channels of communication and cooperation between industry and EPA that can lead to both improved environmental performance and less costly methods of achieving these results. Instead of focusing the dialogue on technology standards, the health risks of varying regulatory standards, and other contentious issues, EPA and the regulated industry often find themselves in a new role of having common interests – how to find cost effective methods of reducing emissions. The classic example of this was the EPA’s 33/50 Program, in which EPA invited firms to participate in a voluntary effort to reduce toxic emissions. Another example is EPA Region I’s Environmental Leadership Program (known as StarTrack), which (among other things) rewards firms that regularly audit and disclose their environmental performance results with preferential treatment on compliance issues.

### **4. Benchmarking and Incentives to Go Beyond Compliance**

The wide availability of environmental information due to current programs provides significant benchmarking opportunities, as firms are able to identify industry leaders in environmental performance. Numerous corporate environmental managers have told me that they closely watch the disclosures of their competitors to determine who the leaders and laggards are and how their company ranks. This information is useful in setting priorities and looking for areas where a company might be able to improve its environmental performance.

Coupled with the apparent desire of firms to be looked upon as environmental leaders (or at least not to be looked upon as among the worst environmental performers), information disclosure can take on many of the positive attributes of market-based regulatory mechanisms such as emission fees or marketable permits. Firms now have an incentive to go beyond compliance as long as the cost of doing so is less than the perceived benefit to the firm. Moreover, society is likely to benefit as these emission reductions are concentrated in companies that can do so at least cost.

In one very important way, information disclosure programs are more akin to emissions fees than to marketable permits. In a marketable permit regime, the government can set the level of emissions and knows in advance that it will be achieved (subject to adequate compliance). However, emissions fees and information disclosure programs have no such guarantee. Although they have the added feature of encouraging beyond compliance behavior, they might not achieve any reduction at all. This has important implications when thinking about information disclosure as a **substitute** for regulation (as opposed to a complementary program).

## **5. Accuracy and Speed of Information Dissemination is Crucial**

One lesson we have learned from recent experience with disclosure programs is that numerous errors can result from mistakes in filling out forms, transcription errors in inputting information into databases, or incorrect interpretations of the information provided before it is input into a database. Even if accurate, much of the data is already outdated by the time it is released to the public. For example, it takes up to 18 months for EPA to release TRI data. In addition, current data systems are not well integrated and

there are often inconsistencies in reported information from one database to the next. Some of these inconsistencies are found in comparing State to Federal data, while others are found by comparing official records within one agency. Thus, a more coordinated effort that would ultimately lead to “one stop shopping” would be warranted. This would reduce the reporting burden, streamline the process of verifying the accuracy of data, and make the disclosure programs more user-friendly.

## **6. Disclosure Tends to be Historical – Not Predictive**

By its very nature, environmental information is historical. As noted above, there is value in disseminating information as soon as possible so that it more accurately reflects a company’s current practice. However, even the most current information on emissions does not necessarily tell us what a company is likely to do in the future. Current government-mandated disclosure programs tend to ignore indicators of future environmental performance such as the existence of sound environmental management practices, environmental R&D, new management and/or new initiatives designed to improve environmental performance, etc. However, these indicators tend to be used by private ratings organizations (e.g. Innovest, Dow Sustainability) as important predictors of future performance. Thus, any proposal to increase government-mandated disclosure should carefully consider the ability of firms to disseminate information about programs in place that are likely to have future environmental benefits. Although only one factor, this concern does tend to provide a justification for relying on private rating organizations instead of the government as a disseminator of environmental performance information.

## **7. Disclosure Programs Must Take into Account Needs and Knowledge of Stakeholders**

Current environmental information disclosure programs are generally designed to provide information to environmentally knowledgeable people rather than to the average citizen attempting to learn about the environment. Emissions information is generally disclosed without related hazard or risk content to place the information in a more meaningful context. This has the potential of misdirecting the attention of stakeholders towards lesser hazards or by focusing their attention on the wrong facilities. It also has the potential for confusing stakeholders about the extent to which they would support or oppose the existence of a polluting facility in their neighborhoods.

Although there is no easy solution to the potential misinformation on the part of the public, in Section IV, I discuss two programs that could help alleviate this problem: (1) research on the information needs of stakeholders, and (2) expanded investment in educating the public (including children) about the meaning of the information being disseminated.

Although admittedly more knowledgeable than the average public, securities analysts and others in the financial markets currently have little use for environmental information disclosure programs. This is partly due to the fact that current programs do not provide information in a format that financial markets can use to accurately and effectively evaluate the environmental performance of firms. Once again, working with the financial community to assess their needs would potentially increase the value of these programs. One possibility (and apparently one of the goals of GRI) is to ultimately standardize disclosure along the lines of financial statements monitored by the SEC.

## **8. Standardization and Objective Measures are Not Panaceas**

Despite a desire by many users of environmental information to be able to compare emissions across companies, recent experience by those who study corporate environmental reporting trends (including the Global Reporting Initiative “GRI”) indicates that standardizing environmental performance across companies is an extremely difficult task. Standardization is important in helping us compare the performance of one company to another or one region to another. Unfortunately, researchers who have attempted to construct broad measures across companies and industries have often determined that the task is nearly impossible. As discussed earlier, some experts have argued that the existence of sound environmental management systems and the company’s internal policies are as good as or even better indicators of a company’s future environmental performance. Thus, there is a good case to be made for the collection and dissemination of information about less objective measures than pounds of toxic emissions.

## **9. What is Not Disclosed May be Just as Important as What Is!**

For numerous reasons, few disclosure programs are comprehensive enough to include all sources of pollution. Small generators, households, non-point sources, and government facilities may be excluded due to a concern about imposing too high a reporting cost, the difficulty of obtaining reliable data, or simply for political reasons. This results in only a partial snapshot of the true picture and might focus attention away from some of the worst polluters onto polluters that should be of lower priority. A well designed information disclosure program should attempt to overcome this problem.

Although including all emission sources in the reporting requirement is certainly a possibility, there are other methods of dealing with this issue as well. For example, the government reporting agency might independently estimate the burden imposed by these other sources and include that information along with the rest of the information being released to the public.

Similarly, life cycle performance indicators and measures of progress are not considered in the current content of environmental information disclosure programs. Thus, a firm that does well on TRI emissions, for example, might have upstream suppliers or downstream distributors that are among the worst polluters. This would not be reflected in the TRI. Indeed, one strategy for a company wishing to get off the top of the TRI list might be to shed some portion of its vertical chain and turn a subsidiary into a supplier. This only distorts the picture. Even if emissions are not the problem, the product itself might pose a significant environmental hazard (e.g. lawnmower emissions or plastic that is landfilled). None of these environmental impacts are currently captured by disclosure programs.

#### **10. The Concern over Security and Proprietary Information is Real**

Finally, as evidenced by recent concern over the security of the EPA Website and ongoing complaints by corporate trade associations, there is a risk associated with increased environmental disclosure. Although one can debate the extent to which this is a problem, it is perceived to be a problem by many in industry. As we have learned in dealing with the public's view on environmental concerns, perception is often reality. One company official has related to me his attempt at "corporate espionage" using

publicly available information on emissions, permits, etc. He was able to replicate his own company's production process within a few percentage points of error. Thus, the concern may indeed be real. Accordingly, environmental information disclosure programs need to be sensitive to these issues and should be designed to mitigate these concerns to the extent possible.

### **III. Policy Initiatives**

There are many different policy options that come under the heading of information disclosure. This section does not necessarily consider an exhaustive list of options and does not analyze any one policy option in great detail. Instead, my intent is to provide the reader with the broad categories and main issues that need to be resolved. For purposes of this paper, I have identified three broad categories of policies: (1) collection and dissemination of information about polluters and/or pollution in a geographic area, (2) information provision and related outreach programs by EPA to polluters, and (3) mandatory disclosure at point of sale, advertisements, etc.

Policy analysis is not ideologically neutral. Instead, how a person views a particular policy will largely be driven by the underlying goals that he or she has in mind in designing the policy in the first place. Thus, for example, if the goal is improving environmental quality, any program that results in a reduction in emissions will be deemed successful. However, if the goal is economic efficiency, then only those programs whose estimated benefits exceed estimated costs will be deemed successful. Note that even if we ignore cost-benefit analysis and consider environmental quality to be the goal, the policy prescription might vary depending on whether one takes a local or global view and whether one considers each program in isolation versus environmental

quality in general. Suppose, for example, that a newly proposed environmental information disclosure program highlights substances known to cause cancer. Suppose further that Company X emits a very small amount of a known cancer causing chemical and a very large amount of an ozone depleting substance. Given limited resources, it is possible that the new information disclosure program will entice Company X to hold off on a voluntary program that would reduce the ozone-depleting chemical and instead focus on the small quantity of the cancer causing substance. Whether or not this particular prioritization is appropriate from society's standpoint should be the criteria used to determine which problem should be tackled – not which pollutant is most visible to the public because of an information disclosure program.

In the discussion that follows, I do not impose any one objective criteria for purposes of highlighting the issues that must be addressed in formulating policy. Instead, I have identified the issues that need to be addressed. How much weight any issue will be given might ultimately depend on the objective of the policymaker. Even if there is disagreement on the goals or weights, it is important to start with a common understanding of the basic theory and empirical evidence so that the debate can focus on the correct issues.

## **1. Collection and Dissemination of Information about Polluters**

The TRI is a classic example of a policy that requires information to be submitted by companies and ultimately to be disseminated by a government agency. Following the success of TRI, there have been numerous proposals to expand the scope of this program and to use the concept in other arenas. For example, EPA could disseminate information

about fines and corrective actions, compliance status, etc. Much of this is already available in the public domain and on the EPA website. However, it is not always in a form that is readily accessible and in a form that will be of use to all stakeholders.

In addition to facility specific information, one might collect and disseminate information about an entire geographic area. This is done to some extent by EPA's Envirofacts program and EDF's Scorecard. The issues are essentially the same. However, now the need for more comprehensive data (e.g. including small generators and nonpoint sources) becomes even more apparent. This approach also highlights the need for information on exposure, ambient air or water quality, and other 'quality of life' issues instead of raw emission numbers.

Although massive amounts of raw data might be of value to researchers, the public would have little use for that type of disclosure. They are unlikely to have the time or educational background required to sift through reams of data and instead want a few bottom line questions answered. This raises several important issues: (a) in what format should the data be disseminated, and (b) by whom? Is it the role of the government to massage the raw data and disseminate a few selected "summary statistics" (e.g., below or above average for their industry; compliance or noncompliance, etc.)? Alternatively, should the government release raw data without commentary? If the latter, should EPA encourage or assist independent or third party non profit organizations to perform that role?

Under current practice in the U.S., EPA has largely disseminated the raw data and left it to others (e.g. Scorecard) to format and characterize the information as they see fit. In some cases, EPA has gone beyond the raw data by trying to make it user-friendly (e.g.,

Envirofacts). However, some programs in other countries have taken a different approach by ‘rating’ firms according to their compliance status, life cycle impact of their product, environmental performance, etc. There are pros and cons to each approach. The simple rating approach is more readily understandable by the public who is used to shorthand ratings provided by independent experts (e.g. Consumer Reports, Underwriters Laboratories, energy efficiency labels on appliances, etc.). On the other hand, these shorthand approaches shift power of setting priorities away from the public into the hands of the government or private agency implementing the program. One solution adopted in many European countries is to establish an independent quasi-governmental agency empowered with this task, whose members are appointed based on the recommendation of various stakeholder groups – including industry. Regardless of who ultimately controls the rating procedure, however, a problem of “gaming” often exists with such programs. For example, if top ratings are given to firms that have lowest toxic emissions in their industries, some firms might shift resources towards reducing toxic emissions while increasing other emissions that are not included in the rating system. In addition, if the top 10% of firms in an industry category are awarded ‘best in class’ ratings, for example, there is little incentive for either the firms at the very top of that list or those far from making the list to improve their environmental performance.

Finally, many implementation issues also arise in the context of these programs – most of which were touched upon in Section II of this paper. Among the most important issues:

- (1) Who should be covered, should there be firm/emission size thresholds, etc.

- (2) What mechanisms are in place to ensure firms that information disclosed about their environmental performance is timely and accurate?
- (3) How does the government ensure it receives truthful information? What enforcement mechanisms are in place?
- (4) What mechanisms are in place to understand and satisfy stakeholder information needs?
- (5) How are security issues and proprietary information dealt with?

## **2. Information Provision by EPA to Polluters**

Information can flow two ways. Although most information disclosure programs are thought of as providing key information to the public or other stakeholders, there might be value in providing information to facilities that pollute. Examples of such information provision programs include Energy Star, Green Lights and to some extent the 33/50 Program which included this as one component. There is some empirical evidence that these programs can have a positive impact on the environment as they lower the cost of obtaining good, credible information, and hence increase the likelihood that firms will adopt these measures. New information technology (e.g. Internet) might decrease the cost of disseminating this information.

In addition, the information revolution might create an opportunity for a new proactive outreach program to help firms reduce the environmental impact of their production processes. Advanced information technologies (including GIS, hazardous chemical transportation tracking systems, weather tracking, etc.) might provide the basis for an early warning system that would alert facilities when their community is especially

vulnerable to emissions, the risk of a spill or environmental disaster is higher than average, etc. Such information takes on the form of a public good, in that it is beyond the scope of most company's individual budget, has social benefits in excess of the private benefits, and nobody can be excluded from the benefits of the reduced environmental exposure. Thus, there might be a role for a central body (government, quasi-government or independent organization) to gather and disseminate such information. This would have to be studied further, since it might be in the best interest of a private entity to take this upon itself as a profitable enterprise subject to the normal discipline of market forces.

### **3. Mandatory Disclosure at Point of Sale or in Advertisements**

One form of information disclosure is to require some type of disclosure in advertising, marketing literature, or at point-of-sale. There are generally two forms of disclosure – mandatory and triggered. A “mandatory” disclosure program would always require disclosure, such as the mandatory fuel efficiency labels on new automobiles. A “triggered” disclosure program would only require a disclosure to appear when a certain type of claim is made. For example, although auto makers are not required to disclose their fuel economy rating in all advertisements, anytime they mention fuel economy in an ad, they must disclose the fuel economy rating number. In the environmental arena, such programs could focus on recycled content, recyclability of product, use of toxic chemicals in production processes, or even the results of an independent environmental rating for that company or product.

Most if not all of the issues raised above are relevant to some extent in the context of advertising or point-of-sale disclosure programs. However, one additional

concern must be addressed - the potential to stifle valuable information. Especially with “triggered” disclosure, it is possible that requiring too much (i.e. too large a label relative to the package, too many words in a television or radio ad, too high a percentage of a web page’s space) will have the effect of raising the cost of making the environmental claim too high relative to its benefits to the company. To some extent, this has happened in the area of “green marketing” as FTC advertising guidelines on deceptive environmental marketing claims have put a damper on both deceptive **and** legitimate environmental marketing. Whether on balance this is good public policy is not the point of this discussion. Instead, I want to highlight the issue to be certain that any program that is proposed is designed to minimize this problem and to enhance the environment – not stifle further environmental improvements.

#### **IV. Research Needs**

In this section, I focus on what I believe to be the most pressing research needs as we begin to focus on new and expanded environmental information programs.

##### **1. Survey of Potential Environmental Information Users**

Before expanding existing programs or implementing new disclosure programs, it is important to have better data on the underlying need for environmental information in the first place. None of the existing government programs were designed from the “user” or “customer” perspective. Thus, I believe there is a need for a comprehensive market survey of current and potential audiences to ascertain their environmental information needs. What information do community groups and the public actually want? Raw

emissions data? Health risk data? Effect on sensitive populations? Comparative data? What format would assist the public in understanding that information? Similar questions can be asked of other stakeholder groups such as employees, environmental groups, and stockholders/financial analysts. These are questions that can only be answered by in depth studies of potential users. Once these questions are answered, the information collection and dissemination programs can be tailored to those needs.

## **2. Differential Effect of Disclosure Programs**

Most of the studies on the effect of disclosure programs in the U.S. have focused on large, publicly traded firms – because those are the firms that are easiest to study by outside researchers. Aside from studies in underdeveloped countries, we know little about the effect of information disclosure programs on small or medium sized firms – and privately held firms in general. We need a better idea of what to expect from expanding programs to cover smaller companies. Would this have the effect of reducing emissions by smaller companies? Would it put a financial burden on smaller companies? We also need a better idea of what would happen if we expanded information disclosure programs but did **not** include smaller companies. Would this put larger companies at a serious competitive disadvantage? Or, would the prospect of higher costs coupled with exemptions for smaller firms cause the larger firms to do nothing to reduce emissions and simply let the bad publicity fall where it may?

Once again, understanding the mechanism by which information disclosure has prompted improved environmental performance would help us here. For example, if the primary mechanism is community pressure near polluting facilities, we would expect the

same degree of pressure regardless of ownership. However, we do not know whether the reaction of small, locally owned companies would be the same as that of larger publicly traded companies. If the primary impetus for change is the national media and pressure from national environmental groups, we would expect less of a reaction from smaller companies that do not have a national reputation to uphold. On the other hand, if it is largely the manager's reputation in the community that drives environmental performance, it is possible that these programs will be more effective when applied to smaller, privately-held companies.

### **3. Cost-Benefit Analysis of Disclosure Programs**

When researchers find a linkage between information disclosure and environmental performance of firms, these relationships are primarily between social benefits (reduced pollution) and private benefits (reduced public pressure, cost reductions from less waste disposal, etc.). Presumably, the private costs are less than the private benefits, or firms would not voluntarily reduce emissions beyond the amount required by law. However, we do not know whether the social benefits exceed the social costs. Given the fact that the public might be misinformed about the risks of various pollutants and the fact that media attention might have more to do with which firms reduce emissions than any social cost-benefit analysis, it would not be entirely surprising to learn that firms reduce certain emissions at a cost that exceeds their social benefits. Thus, a cost-benefit analysis of existing and proposed information disclosure policies is important if we are to focus our attention on the most socially desirable solutions.

#### **4. Feasibility of Exposure or Risk-Based Information Disclosure**

It is important to begin exploring the feasibility of providing meaningful risk-based information in place of existing disclosure protocols. I have already discussed the distortions that might take place by concentrating on raw emissions and not considering the impact these emissions have on people or the environment. The question is whether the state-of-the-art has developed sufficiently so that more meaningful disclosures can be attempted.

#### **5. Effect of GRI and Globalization on Information Disclosure**

Most of the environmental information disclosure laws in the U.S. have been considered unilaterally and not in the context of recent developments in Europe and across the globe. One important development is the Global Reporting Initiative (GRI)<sup>9</sup> which has begun a serious effort to standardize corporate reporting on the environmental performance and sustainability. Many large U.S. based corporations are involved in this process and are pilot testing the GRI format. Any proposal to expand or change U.S. information disclosure programs needs to take into account these recent developments and determine whether a coordinated effort makes sense. Not only would different requirements, formats, etc. be burdensome to companies that need to fill out duplicate forms, but it would have the potential of creating a good deal of confusion by users. Thus, there is a need for ongoing research that compares and contrasts the various European disclosure and reporting laws, the GRI, and U.S. laws in this area.

## **V. Concluding Remarks**

Despite many successes, environmental information mechanisms in the U.S. were not formed as part of a well-designed system of integrated programs. Instead, they have largely evolved in isolation of traditional environmental regulatory policy and developments in the law. Furthermore, the audiences and potential uses of the data provided by environmental information disclosure programs are not well defined. Thus, before new information programs are designed, it is important to first ask why we are collecting the information, for whom the information is being collected, and for what purposes and in what contexts it is necessary to collect the information. We live in a time when there are enormous opportunities to use the power of information to enhance the quality of our lives and the environment in which we live. However, we must not just unleash the power of information blindly without carefully thinking through the consequences of this new quasi-regulatory tool.

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<sup>9</sup> See <http://www.globalreporting.org>

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