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REGULATORY STUDIES PROGRAM

It is Time to Reevaluate the Toxic Release Inventory

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Committee on Small Business
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Chairman Pence and Members of the Subcommittee, thank you for inviting me to submit testimony on the science and economics of EPA’s Toxic Release Inventory rules. I am a Senior Research Fellow and Deputy Director of the Regulatory Studies Program at the Mercatus Center at George Mason University.¹ Through our Public Interest Comment Project, I have submitted comments to the Environmental Protection Agency (EPA) on its TRI proposals regarding persistent bioaccumulative toxic chemicals and lead and lead compounds.² Neither those comments nor this testimony represent the views of any particular affected party or special interest group. Rather, they are designed to protect the interests of American citizens.

I. Overview

In 1986, on the heels of the deadly chemical release in Bhopal, India, Congress directed EPA to begin requiring certain industries to report on the presence and release of certain toxic chemicals on an annual basis. EPA considers this “Community Right-to-Know” program to be “among its most effective strategies for improving environmental

¹ This testimony does not represent an official position of George Mason University.

² Available on line at <http://www.mercatus.org/research/RSP19992.htm> and <http://www.mercatus.org/research/RSP199913.htm>.

performance,”³ and it has expanded its scope significantly over the last sixteen years. Through regulation, EPA has increased the number of industries required to report under the Toxic Chemical Release Inventory (or TRI) by 30 percent, and more than doubled the number of chemicals covered. In 1999, the agency increased the required number of TRI reports for chemicals that persist and bioaccumulate in the environment⁴ and is considering expanding the required reporting further to include chemical use (tracking and reporting the amounts of chemicals moving through a facility), as well as chemical release. On January 17, 2001, EPA lowered the reporting thresholds for lead and lead compounds from 25,000 lbs to 100 lbs.

However, despite EPA’s enthusiasm for Community Right-to-Know,⁵ and its claims that “TRI is widely viewed as a success story,”⁶ it has not offered a thoughtful examination of the real impacts of the program. It has not provided an objective account of the validity or usefulness of the information the program collects and disseminates, and has not evaluated how well it accomplishes EPA’s goals of protecting public health and the environment from chemical hazards. Perhaps more importantly, in light of recent events, EPA has not addressed the risks that making chemical risk information broadly available to potential terrorists can pose.

In 2002, sixteen years after the Bhopal disaster, Americans face a new chemical threat. Terrorists have attacked on our soil, and indicated an interest in using chemical and biological warfare against our civilians. The information made public by the TRI may facilitate a terrorist network intent on causing a new chemical tragedy.

Particularly in light of this new threat, EPA should thoughtfully examine its TRI program. Fifteen years after the first reports were required, it is time EPA (1) reviewed the goals of the program, (2) evaluated how well TRI has achieved those goals, and (3) looked ahead at what future course would best meet its goals of protecting public health and the environment from chemical hazards.

This testimony offers some insights for that examination by reviewing:

- TRI’s enabling legislation and implementing regulations, including the most recent regulations governing reporting of persistent bioaccumulative toxics and lead compounds,
- the rationale for the TRI,

³ EPA Office Of Pollution Prevention And Toxics Issues (OPPTS) Paper # 3, “TRI-Phase 3: Expansion of the EPA Community Right-to-Know Program to increase the information available to the public on chemical use.” 1996. Pg. 1.

⁴ 64 FR 58666; October 29, 1999. See RSP’s comments on that proposal (RSP 1999-2) at www.gmu.edu/mercatus/.

⁵ One of EPA’s goals, as presented in its Strategic Plan, is “Expansion of Americans’ Right to Know About Their Environment.”

⁶ *Ibid.*

- the adequacy of EPA’s economic arguments justifying its expansions of the inventory, and
- whether the TRI in fact meets the purposes EPA and others have identified for it – to provide useful information to communities and to reduce pollution.

My research has lead me to conclude that EPA’s goals for the TRI are not adequately linked to health and the environment, that it does not achieve its stated goals, and that the benefits of the recent expansions are not commensurate with the costs. At the end of this testimony, I offer recommendations for making the TRI more effective.

II. Community-Right-to-Know Regulatory History

In the wake of the catastrophic release of methyl isocyanate from a chemical plant in Bhopal, India, which killed thousands of people, and a subsequent serious, though not deadly, chemical release at a plant in West Virginia, Congress enacted the Emergency Planning and Community Right-to-Know Act of 1986 (EPCRA).

Section 312 of EPCRA requires certain facilities to submit an annual inventory of the designated hazardous chemicals present at the facility. Section 313 requires certain facilities that manufacture, process, or otherwise use more than a threshold amount of any listed “toxic chemical” to submit to both EPA and the state in which it is located, a Toxic Chemical Release Inventory Report (Form R) for that chemical each year. The Form R must identify the quantity of the listed chemical that is “released” to the environment. With the passage of the Pollution Prevention Act of 1990 (PPA), the definition of “release” was broadened to include TRI chemicals that were recycled or treated, as well as those that were transferred off-site as waste or routinely or accidentally released on-site into the air, land or water.

Since passage of the act, EPA has added over 300 chemicals to the list of toxic chemicals subject to TRI. In 1997, EPA expanded the coverage of TRI to encompass approximately 6,000 facilities in six additional industry sectors, including mining, electric power generation, hazardous waste disposal, chemical distribution, petroleum wholesale, and solvent recovery.⁷

EPA’s “TRI-Phase 3” project, which began in 1993, is an effort to expand the TRI to include data not only on the presence or release of chemicals at facilities, but on the use and movement of chemicals within the facility. It issued an advanced notice of proposed rulemaking in September 1996,⁸ along with an issue paper that states, “[t]he Agency finds that materials accounting, which is a method for tracking the amounts of toxic chemicals moving through a facility, has promise for filling in Right-to-Know gaps that have been identified in the present TRI data.”⁹

⁷ 62FR84:23834 (<http://www.epa.gov/tri/frnotices/facilityexpansionfinal.pdf>)

⁸ www.epa.gov/tri/anprpre.htm

⁹ EPA OPPTS Issues Paper # 3, *op. cit.* pg. 1.

The Chemical Right-to-Know (“ChemRTK”) Initiative was announced by former Vice President Al Gore announced on Earth Day, 1998. This effort to increase the public availability of information on the toxicity of high production volume (HPV) commercial chemicals encourages voluntary efforts by companies to test the toxicity of the chemicals they produced. The Vice President also announced two forthcoming rulemakings: (1) a *Children's Health Test Rule*, which would subject HPV chemicals of particular concern to children's health to more detailed and extensive testing; and (2) an expansion of the TRI to focus more attention on toxic chemicals that persist and bioaccumulate in the environment.

This latter rule was issued in October 1999.¹⁰ Among other things, it added several persistent bioaccumulative toxic (PBT) chemicals to the list of chemicals that must be reported, eliminated options for streamlined reporting for PBT chemicals, and significantly lowered reporting thresholds for PBT chemicals. (For example, while Congress set default reporting thresholds at 25,000 pounds for chemicals that are “manufactured” or “processed,” and 10,000 pounds for chemicals that are “otherwise used,” the recent rule lowered those to 0.1 gram for dioxin and dioxin-like compounds, 10 pounds for “highly persistent and highly bioaccumulative” chemicals, and 100 pounds for other PBT chemicals.)

EPA classified lead and lead compounds as PBT chemicals in January 2001.¹¹ This final rule lowered the reporting threshold for lead and lead compounds from 25,000 pounds to 100 pounds, which greatly increases the number of facilities reporting and the number of reports in the TRI.

III. Despite its original goal, the TRI is not aimed at protecting public health.

According to EPA’s web site and the TRI Information Kit distributed to the public, “EPCRA's primary purpose is to inform communities and citizens of chemical hazards in their areas.” EPA’s material further observes that “TRI provides citizens with accurate information about potentially hazardous chemicals and their use so that communities have more power to hold companies accountable and make informed decisions about how toxic chemicals are to be managed,”¹² including encouraging pollution prevention.

Informing the public about hazards in their community is an intuitively desirable social goal. Without knowledge of the likelihood of exposure to health hazards, families may pay more than they would otherwise to live in certain areas, or might take fewer precautions than they would with more information. However, this does not argue that

¹⁰ Environmental Protection Agency, “Persistent Bioaccumulative Toxic (PBT) Chemicals, Final Rule.” *Federal Register*, October 29, 1999 64 FR 58666

¹¹ Environmental Protection Agency, “Lead and Lead Compounds: Lowering of Reporting Thresholds; Community Right-to-Know Toxic Chemical Release Reporting; Final Rule.” 66 FR 4500-4547, January 17, 2001.

¹² EPA’s TRI home page: <http://www.epa.gov/opptintr/tri/>

any information on chemical releases is desirable. The fundamental questions of *what* information will enhance the public's understanding of the risks they face, *how much* of it should be released, and *to whom*, must be directly addressed. To address them, it is important to recognize that information is costly to produce, and depending on how it is communicated and received, may confuse, rather than inform.¹³ Even if we determine that information on the release of certain chemicals has a net social value, we cannot assume that more frequently reported information, or information on a broader range of chemicals would be *more* valuable. Only when the social costs of information are weighed against the social benefits can a determination be made regarding what and how much information is optimal.¹⁴

Largely missing from EPA's set of goals for TRI is a discussion of the goal of protecting public health and the environment. EPA appears to assume, without justification, that these fundamental goals of the agency¹⁵ will be accomplished as a result of TRI's primary goals. Particularly since the catalyst for EPCRA was the deadly chemical accident in Bhopal, it is disconcerting that the focus of TRI has become so detached from any assessment of risks to health or the environment. In the PBT rule, for example, EPA rejected a risk-based metric for reporting dioxin-like compounds in favor of its preferred weight-based option. This is despite the fact that EPA admitted that its preferred option would not allow communities to evaluate potential risks of releases from dioxin-like compounds.¹⁶ Furthermore, though the primary purpose of TRI is to inform about chemical *hazards*, the inventory contains no information about potential exposure to toxic chemicals or potential for health or environmental effects if exposed.

How does information on the pounds of certain chemicals emitted from certain facilities, even if it were perfectly accurate, advance an individual's knowledge of the potential risks he faces by living near those facilities? Consider the alarm that might be engendered by the revelation that a plant near one's home emitted quantities of the following toxic, and potentially carcinogenic, chemicals: acetaldehyde, benzaldehyde, caffeic acid, d-limonene, estragole, and quercetin glycosides. Informed citizens might demand that the facility minimize or prevent the use and release of these chemicals. In fact, these chemicals occur naturally and are likely to be found on a fresh fruit platter of apples, pears, grapes, and mangos.¹⁷

¹³ Recent empirical analysis reveals that individuals do not respond rationally to diverse information on risks, weighting high-risk assessments much greater than low-risk assessments, regardless of source. "Alarmist Decisions with Divergent Risk Information," *The Economic Journal*, 107 (November 1997) 1657-1670.

¹⁴ For a good discussion of the optimal level of information in product markets, see Beales, Craswell, and Salop, "The Efficient Regulation of Consumer Information," *Journal of Law and Economics*, vol. XXIV (December 1981). (In particular, see pages 503, 533-534.)

¹⁵ EPA's web site states that its "mission is to protect human health and to safeguard the natural environment."

¹⁶ See preamble to proposed PBT rule, *op. cit.*

¹⁷ American Council on Science and Health, "Thanksgiving Dinner Menu." See www.ACSH.org.

IV. The economic justification for TRI is weak.

It is widely recognized that regulatory actions are unlikely to make people better off unless they are designed to remedy a significant market failure. As EPA noted in the preamble to the PBT rule, two possible causes of market failure are externalities and information asymmetries. It justified TRI reporting requirements based on the need to correct a “failure” of the market to provide adequate information to the public about the use and release of chemicals. However this analysis is overly superficial and neglects the key question of *what* information and *how much* of it is optimal.

Information is a good, and like other goods, it is costly to produce. Markets generally function well at determining the optimal level of production for different goods, including information. Absent some market failure that results in a sub-optimal production of information, a federal mandate requiring the production of information is likely to divert scarce resources from other, more valued, social goals.¹⁸

EPA argues that the release of toxic chemicals into communities represents an external cost to facilities, and that “[i]t is individuals in society that bear the burden of the externality and individuals in society that require information on toxic chemical releases in order to make rational decisions regarding such things as where to live and work.” To a limited extent, some economists have accepted this notion. For example, Tietenberg and Wheeler argue:

Information about environmental risks is asymmetrically distributed. In a typical case the best knowledge about emission profiles is held by the polluters and/or regulators, not the victims. Furthermore the polluters are unlikely to share the information with victims in the absence of outside pressure to do so.”¹⁹

These analyses suffer from several failings. First, they assume that the toxic release reflects an external cost, when, as EPA recognized in the Economic Analysis document supporting the PBT rule, chemical releases are not themselves evidence of a market failure. In fact, the chemicals reported under TRI are all subject to numerous environmental and occupational regulations designed to internalize the social costs associated with release. With the exception of accidental releases (which are less than 0.1 percent of reported releases and are reported elsewhere), reported TRI releases are routine emissions allowed by laws and regulations.

The second failure of these analyses is that they do not recognize that information on releases is available through other sources. Companies must have operating permits on file with state and federal authorities specifying permitted releases to air and water. For

¹⁸ Beales, Craswell, and Salop, *op. cit.*, and Volokh, Green & Scarlett, “Environmental Information: The Toxics Release Inventory, Stakeholder Participation, and the Right to Know,” Reason Foundation, Policy Study No. 246. November 1998.

¹⁹ Tietenberg and Wheeler, “Empowering the Community: Information Strategies for Pollution Control,” presented at Frontiers of Environmental Economics Conference, October 23-25, 1998.

non-permitted releases, the Emergency Response Notification System, accessible on the Internet, reports notifications of spills and releases of oil and hazardous substances.²⁰

A third failing is that these analyses focus on *information* about environmental release, rather than the underlying concern of *environmental risk* itself. While it may be accurate that “polluters” are unlikely to share information on releases with “victims” unless required to do so, it is not accurate to assume that “polluters” do not have adequate incentives to reduce *risks* to potential “victims.” In the event of a release that harmed public health or the environment, the U.S. regulatory and legal system would certainly impose large costs on the perpetrator of the harm. That potential liability and damage to a company’s reputation provide strong incentives to minimize potential releases that could affect public health and the environment.

Furthermore, the emphasis on providing information to communities assumes rational behavior on the part of the recipients of the information. Even if the information TRI provided conveyed important information on potential risk, the recipients of the information may not interpret it correctly or rationally. Viscusi, in an empirical paper that won the Royal Economic Society Prize for 1997, found that individuals’ responses to divergent risk information revealed “extreme violations of rationality,” as individuals place “inordinate weight on the high risk assessment.” He concluded, “these results do not provide great comfort to economists who hypothesize that decisions will become more rational as we acquire more information to make these decisions.”²¹

Finally, EPA’s analysis neglects the fact that the mandate that business information be made public creates a public good, with its own associated issues.²² The wide release of private business information makes it available to competitors and potential terrorists, as well as communities. Before EPA further expands the number of facilities or chemicals covered, or requires more extensive information on the flow of chemicals through a facility, it should consider the possible negative consequences of the misuse of this information, and balance those costs against the benefits.

A. What are the benefits of TRI information?

Despite fifteen years of experience, EPA has never attempted to quantify the benefits of TRI. Rather, it suggests benefits accrue because the information it requires “may facilitate constructive activities that internalize the negative externality by bringing the marginal social cost curve and the marginal private cost curves closer together.”²³ As noted above, this presumes, without any analysis or evidence, that despite all the regulations and liability in place, there are still negative externalities associated with TRI chemical releases. Moreover, the discussion of benefits does not recognize that the

²⁰ The Emergency Response Notification System (ERNS, www.epa.gov/ERNS) contains release information that is required under several federal statutes including CERCLA, EPCRA Section 304, the Hazardous Material Transportation Act of 1974 (HMTA), and the CWA.

²¹ Viscusi (1997), “Alarmist Decisions...” *op. cit.*

²² Beales, Craswell, and Salop, *op. cit.*

²³ PBT EA

“constructive activities” the information facilitates also involve costs, and that those costs may well exceed the benefits of the activities. In fact, once these social costs are considered, all of the “benefits” discussed in the economic analysis supporting the PBT rule could represent *net* social costs, rather than *net* social benefits. Without a more objective and thorough analysis, one cannot determine whether the net social impact of TRI is positive or negative.

For example, the preamble to the January 1999 PBT proposal stated that “if publication of PBT chemical information leads to reductions in pollution, this generates ‘external’ benefits,” in other words, benefits that would accrue not only to the group that lobbied for the pollution reductions, but other members of the community. However, that would only be true *on net* if the external benefits of the reductions exceeded the external costs. These costs could take the form of higher prices for goods or services, or increased health or ecological risks from substitute chemicals or processes necessitated by the reduction in TRI chemical.

In listing specific benefits of TRI information, EPA cites uses of the data by community and public interest groups to educate the public and exert pressure on companies to reduce emissions. However, the examples it presents include reports with titles such as “Manufacturing Pollution,” “Poisons in Our Neighborhoods,” “Troubled Waters: Major Sources of Toxic Water Pollution,” “Where the Wastes Are,” and “Toxic Hot Spots,” which may serve more to frighten than to educate.²⁴ Whether such efforts provide net social benefits depends, in large part, on whether the alarm they generate is worthy of the risks they seek to mitigate, or whether it causes unnecessary fear and non-productive actions.²⁵ A classic example of the misuse of information to alarm consumers and incite unnecessary actions was the Alar scare of 1989. As the American Medical Association stated in February 1992:

The Alar scare of three years ago shows what can happen when science is taken out of context or the risks of a product are blown out of proportion. When used in the approved, regulated fashion, as it was, Alar does not pose a risk to the public's health.

A more tragic illustration of how incomplete information on chemical risks can lead to counter-productive actions is the 1991 cholera epidemic in Peru. Based on EPA studies showing the potential for a slight increase in cancer risk from trihalomethanes, a chlorination byproduct, local water officials in Lima stopped chlorinating the city's drinking water. The result was a cholera epidemic that claimed over 3,500 lives in 1991 alone.²⁶

²⁴ What's more, Beales, Craswell, and Salop, (p. 505, *op. cit.*) observe that scale economies in information generation and dissemination can lead to natural monopoly problems which convey high levels of market power on information intermediaries.

²⁵ As Viscusi (1997, *op. cit.*) noted, “media and advocacy groups often highlight the worst case scenarios, which tend to intensify the kinds of biases [in weighting high risk information more heavily than is rational] observed here [in his interactive computer survey].”

²⁶ Christopher Anderson, “Cholera Epidemic Traced to Risk Miscalculation,” *Nature*, Vol. 354, 11/28/91, p. 255.

EPA also cites as a benefit to TRI the fact that the stock value of certain companies fell upon the release of their TRI data. Whether this should be classified as a benefit or a cost of TRI depends on whether the TRI information led to a more or less accurate picture of the companies' true value. Most likely, the shareholders of those companies would not consider a decline in the value of their investment a "benefit."

EPA also suggests that TRI offers benefits to regulated industries themselves by revealing information that encourages changes in processes that reduce costs. However, nothing in economic theory would support the notion that mandating the public release of private information would offer the provider of the information any opportunities to increase efficiency and lower costs that it did not already have. On the contrary, while it is certainly possible that, driven by the information release, companies have greater incentives to reduce TRI chemicals, this does not imply a less costly, or even less risky, process. Contrary to what EPA suggests, the fact that companies undertook discharge reductions voluntarily in response to TRI does not mean that they reflected cost savings to the company or other social benefits to communities or consumers.

EPA cites several examples of cases where, in response to the release of TRI data, unions negotiated with companies during contract discussions to reduce a facility's use and release of TRI chemicals. However, this cannot be assumed to be a benefit to the company, the union employees, the surrounding community, or consumers of the goods and services provided by the facility without information on the risk those chemicals posed, and what the opportunity cost of those agreements were. For example, could the union have negotiated a more comprehensive health and benefits package, or higher wages, which would have improved health and welfare more than the reduction in chemicals at the facility?²⁷ The positive correlation between income and health has long been recognized; in fact, recent empirical studies reveal that every \$15 million in regulatory costs results in one additional statistical death.²⁸ Given this significant effect, as well as other health-health tradeoffs, it is not sufficient to conclude that the reduction in TRI chemicals triggered by the release of the data had a net positive impact on health or welfare.

B. What are the costs of TRI?

EPA estimates that facilities subject to reporting under the TRI spend 9,470,696 hours each year collecting and reporting the information required. The bulk of those hours (8.8 million) are for completing the Form R. At \$50 per hour,²⁹ this amounts to about \$475 million per year. In addition to these costs, EPA bears costs associated with data

²⁷ Information that focuses on certain factors (such as toxic chemical releases) can lead people to infer that other workplace issues (such as health benefits or salary) are less important to their health and safety. "Unless such inferences are correct, the scoring system may be used as an inappropriate signal," thus distorting the market. (Beales, Craswell, and Salop, *op. cit.*, p. 525)

²⁸ Randall Lutter, John F. Morrall, III, and W. Kip Viscusi, "The Cost-Per-Life-Saved Cutoff for Safety-Enhancing Regulations", *Economic Inquiry*, Vol. 37, No. 4, 599-608, (October 1999).

²⁹ This hourly estimate is derived by dividing GDP in 2000 by total hours worked.

processing, outreach, and enforcement. Based on estimates EPA prepared for the PBT rule, these EPA costs may add roughly \$9 million more per year.³⁰

EPA estimates the cost of the PBT rule at \$147 million in 2000, the first year that reports are required, and \$81.6 million in subsequent years. These costs comprise the cost to industry of (\$145 million in the first year and \$80 million in subsequent years) and costs to (\$2.0 million in the first year and \$1.6 million in subsequent years). It estimates that the proposed classification of lead as a PBT, and concurrent reduction in reporting threshold for lead and lead compounds would impose costs of \$116 million in the first year and \$60 million in subsequent years.

These paperwork burdens and their associated costs are large, particularly for an action to which EPA attributes no *direct* benefits. (The benefits attributed to the TRI will only be gained from subsequent activities, which would also involve additional costs.) However, they are not a complete estimate of the true social cost of the information collection mandate. First, they exclude the cost of complying with state, local, and federal requirements that are triggered when a chemical is placed on the TRI. A 1994 study of EPA's proposed rule to expand the TRI estimated that the overall cost of these requirements could be as much as six times EPA's estimate.³¹ Furthermore, an estimate of the full social cost of the requirement must consider the opportunity cost of the collection, any social costs due to actions based on inaccurate, incomplete, or misleading information, and the social costs associated with misuse of the information, including industrial espionage and terrorist threats.

The time and money required to compile and report on releases of certain chemicals diverts resources from other activities, some of which may be more effective at protecting health and the environment. The literature on information disclosure in product markets offers interesting insights on this issue. Requiring the disclosure of information on certain product attributes can shift competition among sellers into those attributes, and away from undisclosed attributes, potentially causing distortions in the product market.³² For TRI disclosures, this distortion can result when the release of information encourages facilities to take actions to reduce their use or release of certain chemicals at the expense of other actions that may be more effective at protecting health and the environment, or at achieving other social goals. As noted in the discussion of benefits, above, all of the qualitative benefits EPA attributes to the TRI also involve additional costs which may, in

³⁰ 64 FR 58741. EPA estimated the private cost of the PBT rule at \$147 million in 2000, the first year that reports are required, and \$81.6 million in subsequent years. These costs comprise the cost to industry of (\$145 million in the first year and \$80 million in subsequent years) and costs to (\$2.0 million in the first year and \$1.6 million in subsequent years).

³¹ Price and Crandall, "Critique of USEPA's Regulatory Impact Analysis of the Proposed Rule to Add Certain Chemicals to the Toxics Release Inventory," prepared for the Ad Hoc Industry TRI Chemical Expansion Group. May 2, 1994. This study found that the most significant programs triggered by a TRI listing were: the federal storm water permit program, the federal procurement requirement that agencies reduce their purchases of products containing TRI chemicals, and various state requirements to develop and implement pollution prevention programs for TRI chemicals.

³² Beales, Craswell, and Salop, *op. cit.*

fact, have the effect of imposing additional net costs on citizens and consumers. To the extent the information reported is inaccurate or used to mislead people about threats to their health or well-being, it is very likely to result in actions that are not warranted by objective risk analysis and which divert scarce resources from actions that actually could reduce health risks and environmental harm.

Also missing from EPA's cost estimates are costs associated with the distribution of private information. Wide release of private business information makes it available, not only to communities and governments, but to competitors potential saboteurs, and even terrorists. As Professor Mary J. Culnan, a member of President Clinton's Commission on Critical Infrastructure Protection observes,

Once information gets on the Internet it can be manipulated in ways that were previously unfeasible and there is little accountability for how it is used. The more information that is made available, the more likely it will be used in ways that have nothing to do with the original reasons for collecting it.³³

EPA argues that benefits of reporting will accrue to citizens, public interest groups, government agencies, and facilities themselves. It should also recognize that benefits will also accrue to competitors, national and international, seeking a competitive advantage, as well as to terrorists seeking targets for chemical sabotage.

V. Does the TRI meet the purposes that EPA and others have identified for it?

In its final regulation lowering reporting thresholds for PBT chemicals, EPA dismissed commenters' suggestions that potential health risks be a factor in EPA decisions to list chemicals or set reporting thresholds.³⁴ The agency insisted that its only obligation is to collect and disseminate information about releases, so as to empower communities to make informed decisions, and argues that the potential risks of the chemicals in question are not relevant. Rather, it suggests that this public "report card" will inform communities and encourage businesses to pursue pollution prevention efforts. However, a review of TRI's record reveals that it falls short of even these goals.

A. Does the TRI provide communities useful information?

Even if the information reported by TRI were accurate, the inventory may be misleading because it provides no insight into the different toxicities of the listed chemicals or the potential for exposure to them. A reviewer of the TRI data cannot easily ascertain whether the "release" reflects responsible management and recycling, emissions allowed by regulation, or accidental spills. The inventory certainly offers no insight into whether the benefits of a chemical outweigh the potential risks due to exposure. Thus, even if the quality of the TRI data was high, data on quantities of certain chemicals, without any

³³"A look at ... Cyber Privacy," *Washington Post*, July 13, 1997, p. C3.

³⁴ 64 FR 58687-58695.

insight into the risks they may pose, may serve to misinform and mislead communities about potential health and environmental risks.

Furthermore, a review of available data on the quality of the information in the TRI database sheds doubt on its reliability, even as a simple inventory of pounds of chemicals released. As Tietenberg and Wheeler observe,

Information has both a quantity and quality dimension. Effective risk communication requires that the requisite information be reliable, as well as available. *Inaccurate or partial information can be worse than no information at all, if it promotes either a false sense of security or unjustified fears.*³⁵

Since TRI data are self-reported and not checked for accuracy on an ongoing basis, it is difficult to determine the accuracy of the inventory. However, two EPA studies, one of the 1987 reporting year,³⁶ and one of the 1994 and 1995 reporting years,³⁷ attempted to check the accuracy of reported releases at a sample of facilities. These reveal that a significant fraction of reported releases exhibit large errors. The 1990 report found that 16 percent of the releases reported in the 1987 database were off by more than a factor of ten, and 23 percent were off by more than a factor of two.³⁸ Despite these large errors in individual reporting, the direction of the errors tended to offset one another, allowing EPA to conclude that the data were “surprisingly accurate *in the aggregate.*”³⁹ (Emphasis in original.) The 1998 report, while not as clearly presented, reveals that the accuracy of the TRI data has not improved significantly since 1987.⁴⁰

The inaccuracy of the reported releases is not surprising. There are fundamental limits to how accurate release estimates can be. For example, to estimate non-stack air emissions at a mid-sized facility, one would have to consider hundreds or thousands of valves, flanges, and other release points. Congress specified that no additional monitoring or measurement could be required for the purpose of reporting to TRI. Thus, even the site-surveyed figures, used to estimate the quality of the data in the 1990 and 1998 EPA reports, are themselves only estimates and may not accurately reflect actual releases.

There are other problems with the TRI database. EPA studies reveal that the location data in the EPA-published TRI database contain significant errors. Almost 3 percent of

³⁵ Tietenberg and Wheeler, *op. cit.* (Emphasis added.)

³⁶ EPA, *Toxics in the Community, National and Local Perspectives: The 1988 Toxics Release Inventory National Report*, EPA 560/4-90-017, September 1990. Chapter 3; and Radian Corporation, *Assessment of Data Quality in the 1987 Toxic Release Inventory: Site Visit Program*, Prepared for EPA, March 27, 1990.

³⁷ EPA, *1994 and 1995 Toxic Release Inventory Data Quality Report*, EPA 754-R-98-002, March 1998.

³⁸ Most of these errors in reported non-zero releases reflected *over-reporting* of the release.

³⁹ A major goal of the TRI is to correct market failures associated with incomplete information about chemical hazards in communities. Information that is accurate in the aggregate, but not at the local level, not only does not address this market failure; it can create new externalities by incorrectly identifying areas as hazardous that are not, and vice versa.

⁴⁰ The comments of the Regulatory Studies Program on the proposed PBT rule discuss the findings of these reports in more detail. These are available at www.gmu.edu/mercatus/.

TRI latitudes and longitudes place the facilities in the wrong county, and 0.75% of the facilities are reported to be in the wrong state. EPA analysis of exposure to toxic chemicals in Brooklyn, NY found that about half of TRI latitude/longitude coordinates were good to within 150 meters or better, but that over 15 percent (out of a sample of 87 facilities) were wrong by at least 1 kilometer, with one being misplaced from its actual location by almost 7 kilometers.⁴¹

Not only are reported releases from a facility in a given year unreliable, but changes in emissions from a facility from one year to the next may not reflect actual reductions or increases in releases. EPA suggests that “inter-temporal and inter-facility data provided by TRI” provides unique information on “when facility ... releases are increasing over time.”⁴² However, EPA found that year-to-year changes in estimated releases at facilities are more likely to reflect “estimation technique changes” and “other factors” than physical, engineering and production changes. “Estimation technique changes” and “other factors” accounted for 82 percent of the increases reported between 1989 and 1990, and 67 percent of the 1989 to 1990 decreases.^{43 44}

EPA identifies one purpose of the TRI as “providing a complete profile of toxic chemical releases and other waste management activities.”⁴⁵ Yet, the profile is hardly complete. EPA’s “1997 National Air Quality and Emissions Trends Report” reveals that the TRI data alone represent less than 9 percent (760,000 tons per year) of the total 8.1 million tons of air toxics released in 1993. It concludes that “the TRI’s lack of emission estimates from mobile and area sources” as well as “other significant limitations” “severely limit its utility as a comprehensive air toxics emissions database.”⁴⁶

In sum, the EPA’s 1990 and 1998 reviews of the TRI data quality suggest that, while in the aggregate, the TRI reflects the number of pounds of listed chemicals released, releases reported on a facility basis may contain large errors that make them unreliable for site-specific analysis. Furthermore, EPA has recognized significant limitations associated with even the aggregate numbers, which severely limit the TRI’s utility as a comprehensive database.

⁴¹ Talcott, Branagan & Medina-Ortiz, “Who Is Out There?” Presented at the Air & Waste Management Association meeting, Emission Inventory: Living in a Global Environment, New Orleans, LA, December 8, 1998.

⁴² EPA, *Economic Analysis of the Proposed Rule to Modify Reporting of Persistent Bioaccumulative Toxic Chemicals Under EPCRA Section 313*, December 1998, p. 1-19.

⁴³ EPA, “1991 Toxics Release Inventory – Public Data Release.” 1991, p. 163.

⁴⁴ The example of how ammonia releases were reported illustrates this problem. In 1989, EPA changed its guidance to require facilities to report the quantity of ammonia contained in ammonium sulfate rather than the quantity of ammonium sulfate released. This change in guidance caused the reported quantities of ammonium sulfate released to decline by 586.7 million pounds, when, in fact, net ammonia releases increased by an estimated 40 million pounds. Volokh, Green & Scarlett, “Environmental Information: The Toxics Release Inventory, Stakeholder Participation, and the Right to Know,” Reason Foundation, Policy Study No. 246.

⁴⁵ Preamble to proposed PBT rule, January 1999.

⁴⁶ EPA, *National Air Quality and Emissions Trends Report, 1997*. p. 74 and chapter 5, footnote 4.

B. Does it prevent pollution?

EPA views TRI as a public “report card” for the industrial community, creating a powerful motivation for waste reduction, noting that, with enactment of the Pollution Prevention Act, “businesses and neighboring communities can build on emerging pollution prevention practices for everyone’s benefit.” Other advocates and users of TRI stress “pollution prevention” as the ultimate purpose of the database. For example, Friends of the Earth observes, “the true role of a chemical inventory is to stimulate pollution prevention and waste reduction programmes.”⁴⁷

According to EPA, “industries have reduced their on- and off-site releases of TRI chemicals by almost 50% or 1.5 billion pounds” since 1988. However, given the inaccuracies in the database discussed above, it is not clear how much confidence we should place in these figures.

Assuming these statistics are accurate, however, they do not tell us the extent to which toxic emission reductions over the last decade are attributable to TRI versus other actions. As a Reason Foundation study observes, the use of industrial chemicals, including those on the TRI, has been declining relative to total output for several decades (before the introduction of the TRI):

In the 1960s, each 1 percent of GDP growth increased the demand for industrial chemicals by 2.9 percent; this ratio fell to 1.5 percent in the 1970s, 1.0 percent in the 1980s, and 0.7 percent in the 1990s.⁴⁸

That study attributes this in part to a decline in “heavy industries that are big chemical users (automobiles, steel, housing) ... relative to more-sophisticated and less-chemical-intensive industries and as global competition increases.”⁴⁹ The numerous air, water and waste regulations that have been implemented over the last decade have also contributed to the decline in emissions. For example, implementation of maximum achievable control technology (MACT) standards, as required by the Clean Air Act Amendments of 1990 are estimated to have decreased air toxics emissions by 660,000 tons between 1993 and 1997⁵⁰ and are expected to reduce emissions by 1.5 million tons per year over the next 10 years.⁵¹

VI. Conclusions

Informing the public about hazards in their community is an intuitively desirable social goal. However, EPA continues to expand the TRI without addressing the fundamental questions of *what* information will enhance the public’s understanding of the risks they

⁴⁷ Friends of the Earth web site: www.foe.org.

⁴⁸ Volokh, Green & Scarlett, *op. cit.*

⁴⁹ Volokh, Green & Scarlett, *op. cit.*

⁵⁰ EPA, *National Air Quality and Emissions Trends Report, 1997*. p. 75.

⁵¹ *Ibid.*, p. 80.

face, *how much* of it should be released, and *to whom*. Toxic releases, as defined under TRI, are not equivalent to health or environmental hazards, so data on pounds of chemicals released, as provided by TRI, fail to provide communities relevant data on risks that may be present. Furthermore, EPA does not relate its second goal of preventing pollution with its ultimate concern for improving human health and protecting our natural resources.

Not only has the TRI information not been demonstrated to be relevant for measuring risks to health or the environment, it is neither accurate nor comprehensive. EPA quality reviews suggest that, while in the aggregate, the TRI reflects the number of pounds of listed chemicals released, releases reported on a facility basis may contain large errors that make them unreliable for site-specific analysis. Furthermore, EPA has recognized significant limitations associated with even the aggregate numbers, which severely limit the TRI's utility as a comprehensive database. While EPA and others may have been successful at providing easy access to TRI data, there is no evidence that it has been successful at informing consumers and citizens of real health or environmental threats.

EPA has not supported with available data its recent regulations reducing reporting thresholds for certain PBT chemicals and lead compounds. Despite extensive information on these chemicals, the reporting thresholds are not based on any quantitative analysis of the magnitude of releases that will be captured, nor the risks posed by releases at different thresholds.

Information is a good, and like other goods, it is costly to produce. More information is not necessarily more valuable nor more relevant to communities. To avoid tragedies such as the cholera epidemic that ensued when officials in Lima, Peru heeded EPA's warnings about the potential carcinogenicity of chlorination byproducts, EPA should take seriously its responsibility for informing, but not alarming, communities.

The costs of complying with the TRI is close to \$500 million each year. Yet EPA does not present any direct benefits of the TRI or the recent expansion in reporting requirements, but justifies it qualitatively on the grounds that the new requirements will increase available information and facilitate further regulation of toxic chemicals. However, this overlooks the fact that for several of the key chemicals subject to these rules, extensive release data have already been compiled. EPA does not justify the need for additional, arguably less accurate, release information from TRI. Moreover, EPA counts as a qualitative benefit the fact that the TRI inventory would facilitate new regulation, without recognizing that any new action would, itself, involve costs as well as benefits. In fact, all of the subsequent actions to which the rules attribute qualitative benefits could, in reality, impose net social costs.

VII. Recommendations

The TRI has been in place now for over fifteen years. EPA has sufficient information to take stock of what it has achieved and evaluate ways to make it more effective at providing communities relevant information to enable them to protect their health and the environment. The recent PBT and lead rules do not appear to have benefited from the

experience of the last fifteen years, nor from information made available through various other agency efforts to reduce health and environmental risks from toxic chemicals.

EPA should stop increasing the scope of chemicals covered by the TRI, and should certainly not expand the program to require reporting of chemical processes within plants.

Particularly now, EPA owes it to the public to take an honest look at the value and the social cost of the data that is being reported under TRI. The mere act of making vast amounts of data on chemical quantities available to the public should not be assumed to provide value without a careful examination of whether reliable and meaningful information is being conveyed about health and environmental risk. It may find that less data, targeted at higher risk chemicals and facilities, would provide more useful information than more data on more chemicals. The statute requires EPA to make decisions regarding reporting frequency based on “experience from previously submitted toxic chemical release forms” and the extent to which the information has been used. It also suggests that EPA consider the burden on reporting facilities.⁵²

EPA’s experience from previously submitted toxic chemical release forms has revealed that year-to-year changes in estimated releases at facilities are more likely to reflect “estimation technique changes” and “other factors” than physical, engineering and production changes. “Estimation technique changes” and “other factors” accounted for 82 percent of the increases reported between 1989 and 1990, and 67 percent of the 1989 to 1990 decreases.⁵³ As a result, reducing the frequency of reporting should not change the value of the information available to potential users. Of course, EPA’s experience with TRI would allow it to tailor reporting frequency to the attributes of different facilities and chemicals. For example, it might find that the value of the information provided would not be adversely affected (and might even be improved) if it reduced reporting frequency for all but newly-reporting facilities, facilities that have had major changes, or facilities that comprise the majority of releases. It could also tailor reporting frequency to characteristics of the chemical. For example, the Small Business Administration recommended that PBT reporting be required “only every three to five years,” noting that “because PBTs are trace elements in processes that are integral to industrial manufacturing, PBT emissions are unlikely to change significantly from year to year.”⁵⁴

EPA has conducted two data quality reviews of TRI reporting, which suggested significant errors in reported releases. They also reveal that, despite the extensive outreach, guidance documents, built-in error checking, and electronic reporting that have evolved since 1987, the reporting accuracy has not improved. EPA should extend this examination to determine whether reports are more accurate for larger facilities or larger releases. If so, modifying thresholds to capture large releases from large facilities might actually improve the quality of the inventory.

⁵² PBT Proposal, p. 719

⁵³ EPA, “1991 Toxics Release Inventory – Public Data Release.” 1991, p. 163.

⁵⁴ SBA December 8 memorandum, *op. cit.* p. 6.