

MERCATUS CENTER

GEORGE MASON UNIVERSITY

April 1, 1999

Ms. Carol M. Browner
Environmental Protection Agency
401 M St., SW
Washington, DC 20460

RE: Docket Control Number OPPTS-400132

Dear Ms. Browner:

The Regulatory Studies Program of the Mercatus Center at George Mason University offers the enclosed comments on EPA's proposal to modify reporting of persistent bioaccumulative toxic (PBT) chemicals, and to add a reporting category for dioxin and dioxin-like compounds under the Toxic Release Inventory (TRI) of EPCRA Section 313. RSP is dedicated to advancing knowledge of regulations and their impact on society. As part of its mission, this program produces careful and independent analysis of agency rulemaking proposals from the perspective of the public interest. Thus, these comments do not represent the views of any particular affected party or special interest group, but are designed to protect the interests of American citizens.

Informing the public about hazards in their community is an intuitively desirable social goal. However, since chemical releases are not equivalent to health or environmental hazards, TRI data on pounds of chemicals released fail to provide communities relevant information on *risks* that may be present. Furthermore, EPA data quality reviews reveal that, while reasonably accurate in the aggregate, releases reported on a facility basis may contain such large errors as to make the TRI data unreliable for site-specific analysis. EPA has also 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.

The PBT proposal does not appear to have benefited from the experience of the last ten years, nor from information made available through various other agency efforts to reduce health and environmental risks from toxic chemicals. Despite extensive information on PBT 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. More information is not necessarily more valuable nor more relevant to communities. EPA should take seriously its responsibility for informing communities, but not alarming them.

The Regulatory Studies Program appreciates the opportunity to comment on this TRI proposal. We hope that consideration of the enclosed comments and recommendations will enhance the quality of the PBT regulation, and enable EPA to target the TRI more effectively to improve the quality and relevance of the information it provides communities.

Wendy L. Gramm, Director
Regulatory Studies Program

Enclosure

Comments on the Environmental Protection Agency's

Proposed Amendments to the Toxic Release Inventory (TRI) Persistent Bioaccumulative Toxic (PBT) Chemicals¹

The Regulatory Studies Program (RSP) of the Mercatus Center at George Mason University is dedicated to advancing knowledge of regulations and their impacts on society. As part of its mission, RSP produces careful and independent analyses of agency rulemaking proposals from the perspective of the public interest. Thus, the program's comments on EPA's proposal to modify reporting of persistent bioaccumulative toxic (PBT) chemicals, and to add a reporting category for dioxin and dioxin-like compounds under EPCRA Section 313 do not represent the views of any particular affected party or special interest group, but are designed to protect the interests of American citizens.

The first section of these comments provides background on the statutory authority for the Toxic Chemical Release Inventory (TRI), and summarizes the current proposed amendments to lower thresholds for certain PBT chemicals. Section II examines the stated rationale and goals for TRI, and Section III examines whether the TRI, as implemented, actually meets these goals. Section IV discusses whether the social benefits of TRI in general are commensurate with the social costs, and Section V examines the likely benefits and costs to American citizens of the current PBT proposal. Section VI offers the Regulatory Studies Program's conclusions and recommendations. Appendix 1 presents the RSP Checklist for this proposal. The RSP Checklist provides a consistent framework by which policy makers and interested reviewers can evaluate this action, and the analysis supporting it, and compare it to other federal regulatory actions.

Background

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

¹ Prepared by Susan E. Dudley, Visiting Research Fellow, Regulatory Studies Program of the Mercatus Center at George Mason University.

as those that were transferred off-site as waste or routinely or accidentally released on-site into the air, land or water.

When Congress passed EPCRA in 1986, it 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 statute also included a list of approximately 300 chemicals and chemical categories, but authorized EPA to add to the list chemicals that the agency determined could cause, or be reasonably anticipated to cause (1) acute health effects at reasonably expected exposure levels, (2) chronic health effects, including cancer or other tumors, or (3) a significant adverse effect on the environment. Since passage of the act, EPA has added over 300 chemicals to the list of toxic chemicals subject to TRI.

EPA’s January 5, 1999 Federal Register notice proposes several modifications to the TRI Section 313 reporting requirements for selected chemicals that persist and bioaccumulate in the environment. The proposal would:

- Set new criteria for persistence and bioaccumulation/bioconcentration;
- Add six PBT chemicals to the Section 313 list (benzo(g,h,i)perylene, Benzo(j,k)fluorene or fluoranthene, 3- Methylcholanthrene, octachlorosytrene, pentachlorobenzene, and tetrabromobisphenol;
- Remove the fume or dust qualifier for vanadium and vanadium compounds (but not classify them as PBTs);
- Lower the reporting thresholds for chemicals classified as PBTs;
- Modify the dioxin and dioxin-like compounds category previously proposed;
- Eliminate several options for more streamlined reporting of PBT chemicals:
 - Eliminate the *de minimis* exemption for PBT chemicals subject to lower reporting thresholds,
 - Eliminate the option of reporting PBT releases through the abbreviated Form A for small quantities,
 - Eliminate the option of reporting PBT releases using range codes rather than numerical values, and
 - Require PBT reporting to the tenth of a pound (or, in the case of dioxin and dioxin-like compounds, to the picogram) rather than to the nearest pound, as allowed for other TRI chemicals; and
- Add a “manufacture only” activity qualifier to the dioxin category, so that facilities that only process raw materials containing background levels of dioxin would not be required to report.

The Rationale for TRI

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,"² 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 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.³ 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.⁴

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 agency⁵ 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 proposal, for example, EPA proposes to reject a risk-based metric for reporting dioxin-like compounds in favor of its preferred weight-based option. This is despite the fact that EPA admits in the preamble that its preferred option would not allow communities to evaluate potential risks of releases from dioxin-like compounds. Furthermore, though the primary purpose of TRI is to inform about chemical *hazards*, the inventory contains no information about

² EPA's TRI home page: <http://www.epa.gov/opptintr/tri/>

³ 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.

⁴ 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.)

⁵ EPA's web site states that its "mission is to protect human health and to safeguard the natural environment."

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.⁶

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 notes in the preamble to the proposed PBT rule, two possible causes of market failure are externalities and information asymmetries. It justifies the proposal, and other 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.⁷

The Economic Analysis supporting the proposed PBT rule 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.⁸

⁶ American Council on Science and Health, "Thanksgiving Dinner Menu 1998." See www.ACSH.org.

⁷ 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.

⁸ Tietenberg and Wheeler, "Empowering the Community: Information Strategies for Pollution Control," presented at Frontiers of Environmental Economics Conference, October 23-25, 1998.

These analyses suffer from three failings. First, they assume that the toxic release reflects an external cost, when, as EPA recognizes in the Economic Analysis document supporting the 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 non-permitted releases, the Emergency Response Notification System, accessible on the Internet, reports notifications of spills and releases of oil and hazardous substances.⁹

The 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. A recent empirical paper (which 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.” The author 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.”¹⁰

TRI Implementation

This section examines whether the TRI actually meets the purposes that EPA and others have identified for it, i.e., to inform communities and to prevent pollution.

⁹ 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.

¹⁰ Viscusi (1997), “Alarmist Decisions...” *op. cit.*

Does the TRI provide communities useful information?

As discussed above, 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 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 analysis of the quality of the information included 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.*¹¹

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,¹² and one of the 1994 and 1995 reporting years,¹³ 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.¹⁴ 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.*”¹⁵ (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. Appendix 2 to these comments discusses the findings of these reports in more detail.

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

¹¹ Tietenberg and Wheeler, *op. cit.* (Emphasis added.)

¹² 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.

¹³ EPA, *1994 and 1995 Toxic Release Inventory Data Quality Report*, EPA 754-R-98-002, March 1998.

¹⁴ Most of these errors in reported non-zero releases reflected *over-reporting* of the release.

¹⁵ 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.

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 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.¹⁶

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. The Economic Analysis to the proposed rule suggests that “inter-temporal and inter-facility data provided by TRI” provides unique information on “when facility ... releases are increasing over time.”¹⁷ 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.^{18 19}

The preamble to the proposed rule identifies one purpose of the TRI as “providing a complete profile of toxic chemical releases and other waste management activities.” 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

¹⁶ 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.

¹⁷ EPA, *Economic Analysis of the Proposed Rule to Modify Reporting of Persistent Bioaccumulative Toxic Chemicals Under EPCRA Section 313*, December 1998, p. 1-19.

¹⁸ EPA, “1991 Toxics Release Inventory – Public Data Release.” 1991, p. 163.

¹⁹ 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.

significant limitations” “severely limit its utility as a comprehensive air toxics emissions database.”²⁰

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.

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.”²¹

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.²²

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.”²³ 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

²⁰ EPA, *National Air Quality and Emissions Trends Report, 1997*. p. 74 and chapter 5, footnote 4.

²¹ Friends of the Earth web site: www.foe.org.

²² Volokh, Green & Scarlett, *op. cit.*

²³ Volokh, Green & Scarlett, *op. cit.*

and 1997²⁴ and are expected to reduce emissions by 1.5 million tons per year over the next 10 years.²⁵

TRI's social benefits and social costs

The Economic Analysis prepared for the draft rule includes a nice summary of the “theory of market failure,” which describes potential market failures arising from externalities and inadequate information. The discussion recognizes that the optimal level of toxic emissions is not necessarily zero, but a function of the social costs and social benefits of those emissions. It discusses three possible solutions to the problem of externalities: command and control; incentive strategies, such as emission charges; and information-based strategies. This is generally a solid economic discussion, which criticizes command and control strategies as being cost-ineffective because they are insensitive to the relative costs of emissions control. It also notes, correctly, that even incentive-based strategies, while more cost-effective, may still result in deadweight losses to society if standards are set too high or too low.

The discussion of information-based strategies is flawed, however, because it ignores several key factors: (1) facilities are already subject to numerous environmental requirements designed to address potential health and environmental risks, and therefore externalities may already be internalized, (2) information itself is a good, valuable to have and expensive to produce, (3) incomplete or inaccurate information may misinform, and create market failures, rather than address them (for example the stress caused by alarming, but incorrect, information has real social costs) and (4) the mandate that business information be made public creates a public good, with its own associated issues.²⁶

Social Benefits

The Economic Analysis does not attempt to quantify the benefits of TRI or the proposal. Rather, the qualitative discussion of benefits in the proposed rule is based on the notion that the new information “may facilitate constructive activities that internalize the negative externality by bringing the marginal social cost curve and the marginal private cost curves closer together.” 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 “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 preamble 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.

²⁴ EPA, *National Air Quality and Emissions Trends Report, 1997*. p. 75.

²⁵ *Ibid.*, p. 80.

²⁶ Beales, Craswell, and Salop, *op. cit.*

For example, the preamble states 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.²⁷ 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.²⁸ 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 non-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.²⁹

The preamble 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.”

²⁷ 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.

²⁸ 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].”

²⁹ Christopher Anderson, “Cholera Epidemic Traced to Risk Miscalculation,” *Nature*, Vol. 354, 11/28/91, p. 255.

The preamble 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?³⁰ 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.³¹ 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.

Social Costs

EPA estimates the cost of the proposed rule at \$128 million in the first year that reports are required, and \$71 million in subsequent years. These costs comprise the cost to industry of collecting and reporting the information (\$126 million in the first year and \$70 million in subsequent years) and costs to EPA associated with data processing, outreach, and enforcement (\$1.8 million in the first year and \$1.4 million in subsequent years).

EPA estimates that 9,500 facilities will submit reports under the proposal, of which 2,600 (over 25 percent) will be filing TRI reports for the first time. These facilities will submit an additional 17,000 Form Rs at an estimated total burden of 1.8 million hours in the first year, and 1 million hours in subsequent years. The increased burden from this one rule represents over one percent of the total information collection burden imposed by all

³⁰ 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)

³¹ Lutter, Morrall and Viscusi, "The Cost per Life Saved Cutoff for Safety-Enhancing Regulations," *Journal of Economic Literature*, forthcoming.

EPA requirements.³² TRI reporting in total comprises between 7 and 8 percent of the burden imposed by all of EPA's other requirements combined.³³

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 proposal would 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.³⁴ 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 (i.e., industrial espionage).

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.³⁵ 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 the Economic Analysis attributes to the proposal also involve additional costs which may, in 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 the Economic Analysis's estimate of costs are costs associated with the distribution of private information. Wide release of private business information

³² OMB, *Information Collection Budget of the United States Government*. Fiscal Year 1998. Office of Management and Budget, Office of Information and Regulatory Affairs.

³³ EPA estimates that TRI imposes a reporting burden of roughly 9 million hours per year (including the requirements of the proposal), compared to EPA's FY 1998 burden of 114.4 million hours. *Information Collection Budget of the United States Government*. Fiscal Year 1998.

³⁴ 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.

³⁵ Beales, Craswell, and Salop, *op. cit.*

makes it available, not only to communities and governments, as discussed in the Economic Analysis, but to competitors and potential saboteurs. 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.³⁶

Distribution of Benefits and Costs

The Economic Analysis supporting the proposal estimates the economic impact on small entities, including small municipalities, by examining the estimated costs as a fraction of revenue. It concludes that while the majority of the affected entities are small (68 percent), a very small fraction of those would experience costs that exceed one percent of their revenue.

The Economic Analysis does not justify its percent-of-revenue metric, or why it would be a good measure of impact across different industry segments. High volume, low margin industries might have profits that are only a few percent of total revenue, in which case, costs that are close to one percent of revenue would be a very large percent of profit, while lower volume, higher margin industries may have profits that are a much higher percent of revenue.³⁷

According to SBA, during debate on the Regulatory Flexibility Act, Congress and academics identified several examples of 'significant impact,' none of which justify EPA's ratio of compliance-cost-to-revenue metric:

- A rule that provides a strong disincentive to seek capital, 126 Cong. Rec. S10938 (daily ed. August 6, 1980);
- 175 staff hours per year for recordkeeping, *Id.*;
- Impacts greater than the ... fine imposed for non-compliance, 126 Cong. Rec. H24,578 (daily ed. September 8, 1980);
- New capital requirements beyond the reach of the entity, *Id.* at H24,593;
- Any impact less cost-efficient than another reasonable regulatory alternative, *Id.* at H24,595;

³⁶“A look at ... Cyber Privacy,” *Washington Post*, July 13, 1997, p. C3.

³⁷ As Chapter 3 of SBA's Federal Agency Review Draft Practitioner's Guidance observes, “Percentage reductions in revenues cannot predict long-term insolvency without information on the profit margin of the relevant size-category in the regulated industry.” (This draft is subject to revision based on reviews by the federal regulatory community.)

- Any impact where the adverse cost impact is greater than the value of the regulatory good, *Id.*; and,
- Impacts reflecting anti-competitive effects in the marketplace, *Id.* at H24,596.³⁸

SBA’s Draft Practitioner’s Guidance states “agencies considering using revenue or profit criteria such as annualized capital compliance costs greater than ‘1 percent of revenues’ or ‘10% of pre-tax profits’ should explain in their analytical report the relationship of these levels to solvency and why 1 percent, compared with other levels, constitutes a significant impact.”³⁹ EPA offers no such explanation. At a minimum, the Economic Analysis should use several different metrics to determine economic impacts, and to determine how those impacts would be distributed across companies of different sizes and industry segments.⁴⁰

The Economic Analysis is also required to address the potential impact on low income and minority populations and on children, under Executive Orders 12989 and 13045, respectively. However, it merely asserts that the information provided by the proposal will have a positive impact on the health and environment of these population segments. As discussed above, however, collection and dissemination of the information and the subsequent actions engendered by the information cannot be presumed, without more thoughtful analysis and discussion, to provide net benefits. Low income populations in particular may experience negative health and welfare impacts to the extent the information encourages actions that increase the costs of consumer goods and services, reduce wages, alter firms’ location decisions, and divert resources from other health-improving activities. As noted above, recent research suggests these health-health tradeoffs may be more significant than previously recognized.

The TRI has other important distributional impacts that are implicit in EPA’s analysis, but not directly addressed. The Economic Analysis argues that benefits will accrue to citizens, public interest groups, government agencies, and facilities themselves. But benefits will also accrue to competitors, national and international, seeking a competitive advantage.

Examination of the PBT Proposal

Persistence and bioaccumulation criteria

This proposal defines, for the first time, criteria for persistence and bioaccumulation under EPCRA Section 313. After reviewing the criteria developed by various national and international organizations, EPA appears to have chosen the most stringent criteria, on the grounds that the purpose of TRI is to provide communities with “relevant

³⁸ SBA Federal Agency Review Draft *Practitioner’s Guidance*, chapter 3, *op. cit.*

³⁹ *Ibid.*

⁴⁰ EPA’s draft Guidelines for Preparing Economic Analysis, which describes various measures to estimate impacts, mentions these ratios only parenthetically, as a possible screening tool, but stresses their limitations. November 3, 1998 Review Draft, chapter 9.

information” on releases “that may present a hazard.”⁴¹ As discussed above, more information is not necessarily more valuable nor more “relevant” to communities. On the contrary, citizens are likely to infer that releases that EPA deems worthy of reporting must represent real threats to their community. 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. Given the extensive information available to EPA on PBT chemicals, it should ensure that the criteria defined in this rule are consistent with what other EPA offices and other organizations have considered a significant health and environmental risk.

Selection of chemicals

EPA justifies the proposed lower reporting thresholds for certain PBT chemicals, based on its belief that “as a general matter, the release to the environment of toxic chemicals that persist and bioaccumulate is of greater concern than the release of toxic chemicals that do not persist or bioaccumulate.”⁴² It claims that

the reporting of PBT chemicals under EPCRA Section 313 will provide data on PBT chemicals to EPA, industry, and the public. The availability of that data can allow all parties to identify and track releases of PBT chemicals and monitor the progress of the programs designed to reduce the amount of PBT chemicals entering the environment. The data will also allow EPA and others to design prevention strategies that are focused and effective.

However, at least two of the compounds, dioxin and mercury, which comprise over 40 percent of the incremental reports required by this proposal,⁴³ have already been studied extensively, and significant amounts of data exist on the sources and magnitude of their release. EPA’s December 1997 report to Congress on mercury includes a national map of emission sources.⁴⁴ An October memorandum from EPA confirms that its 1994 Dioxin Assessment does contain ambient air measurements.⁴⁵ In addition, EPA’s air office has compiled an emissions inventory of hazardous air pollutants that account for 90 percent of the emissions for six of the PBTs that would be addressed by the proposal.⁴⁶

It is unlikely that TRI data, which, as specified in the enabling legislation, will not be based on new measurement or monitoring, will be more accurate or more complete than existing information, which is based on sophisticated analysis and subject to extensive

⁴¹ PBT Proposal, p. 692.

⁴² EPA, “Persistent Bioaccumulative Toxic (PBT) Chemicals; Proposed Rule” Federal Register, January 5, 1999 (Vol. 64, Number 2) (PBT Proposal), p. 691.

⁴³ Economic Analysis *op. cit.* Table 3-1.

⁴⁴ EPA, “Mercury Study Report to Congress,” December 1997. It is interesting to note that this eight-volume report is not listed as a reference for the TRI proposal.

⁴⁵ Memorandum from Cody Rice, EPA to TRI PBT Inter-Agency Discussion Group, on FETC Questions on Dioxin from 10/30/98 Meeting. October 30, 1998.

⁴⁶ Small Business Administration memorandum: “SBA Recommendation on Draft TRI PBT Rule,” dated December 8, 1998, to Jere Glover, Chief Counsel from Kevin Bromberg.

review. As EPA's April 1998 dioxin report observed, "the current state of knowledge cannot support the development of emission factors that can be used to accurately estimate emissions on an individual facility basis."⁴⁷

EPA should consider the information already available on dioxin and mercury, and evaluate whether requiring reporting under TRI would contribute meaningfully to the existing field of knowledge on those chemicals.

The preamble requests comment on whether to classify cobalt and vanadium as PBTs and lower their reporting thresholds accordingly. This does not appear to be warranted. EPA appears to have elected not to classify cobalt and vanadium as PBT chemicals during interagency review of the proposal, and this decision is justified by available information. EPA's references reveal that bioaccumulation is a not significant concern for either chemical. There is evidence of bioaccumulation in only a limited number of plants and animals, no evidence of biomagnification in higher trophic levels, and no evidence of toxic effects to organisms.⁴⁸ Moreover, EPA's Office of Solid Waste has excluded these metals from its most recent lists of bioaccumulative toxics based on a lack of evidence of bioaccumulation.⁴⁹ Therefore, RSP concurs with EPA's proposed decision on these two chemicals.

Selection of thresholds

The proposal would reduce reporting thresholds (from 25,000 pounds for chemicals that are manufactured or processed, and 10,000 pounds for chemicals that are otherwise used) 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 presents little justification for the reduced level of the reporting thresholds proposed in this rule, other than to state that, since these chemicals persist and bioaccumulate, thresholds should be lower than for chemicals that do not.

Given the extensive information currently available on releases of these chemicals (especially mercury, dioxin and hazardous air pollutants), EPA should be able to offer a more thoughtful defense of the proposed revised level. First, EPA should carefully consider the value the newly required reports will add to the public's ability to identify and track PBT releases. If, after such consideration, EPA determines that additional information on releases of these chemicals would be valuable, it should take advantage of the data it has already collected to define reporting thresholds that will (1) capture the significant releases, and (2) provide meaningful and useful information. Neither the

⁴⁷ Referenced in Small Business Administration memorandum: "Data Accuracy Requirements; Dioxin and the April 1998 Dioxin Inventory Report." Dated October 27, 1998 from Kevin Bromberg to Christine Augustyniak, Angela Hofmann, Jim Laity, Heidi King, Debra Littleton.

⁴⁸ Memorandum from Art Fraas to Susie Hazen dated November 17, 1998 refers to *Metal Ions in Biological Systems*, Volume 6, H. Sigel, ed, p. 148, and Cole, C.J. and Carson, B.L., "Cobalt in the Food Chain," in *Trace Metals in the Environment*, Volume 6, Smith, I.C., and Carson, B.L., ed.

⁴⁹ Small Business Administration memorandum: "PBT Designations – comparison with RCRA Rule," dated December 14, 1998, from Kevin Bromberg to Christine Augustyniak, Angela Hofmann, Jim Laity, Heidi King, Debra Littleton, David Moses.

preamble nor the Economic Analysis presents evidence that the net benefits of the preferred reporting thresholds exceed those of alternative thresholds. In fact, the only justification EPA presents – that chemicals that persist and bioaccumulate in the environment should have relatively lower reporting thresholds than other chemicals – could be applied, just as defensibly, to support *raising* the thresholds for non-PBT chemicals.

As noted above, it is overly simplistic to suggest that the more information the public has on releases, the better. EPA appears to have examined existing data and done some balancing when it rejected petitioners' requests for a zero reporting threshold for dioxin and dioxin-like compounds, because "the best available data indicate that a threshold of zero would capture an extremely large number of facilities and that such a threshold may have significant problems regarding enforcement."⁵⁰ EPA could incorporate information on the fraction of total releases captured by different reporting thresholds to make more reasoned determinations on appropriate levels. For example, analysis conducted by the Small Business Administration suggests that for many of the highly persistent and bioaccumulative chemicals for which EPA has proposed a 10 pound threshold, a threshold of 100 pounds (or even 1,000 pounds) would capture the vast majority of the chemicals used.⁵¹ The SBA analysis reveals that higher thresholds for these chemicals/categories would also significantly reduce reporting burden. Perhaps more importantly, more targeted reporting thresholds would provide more relevant and meaningful information to the public, consistent with Congressional intent.

Furthermore, the public would benefit from data that are more directly linked to health risks. EPA has the risk assessment experience and expertise to ensure that the public is provided meaningful information on releases that can reasonably be expected to pose potential health or environmental hazards. It should extend the type of balancing it demonstrated in rejecting a zero threshold for dioxin to develop a clearer understanding of not only the facilities affected and quantities released, but of health and environmental impacts associated with different thresholds.

Toxicity equivalents for dioxin-like compounds

The preamble discusses, as an alternative to weight-based reporting of dioxin-like compounds, reporting in "toxicity equivalents." Toxicity equivalents appear to offer important advantages over the weight-based approach. First, they convey risk information, which is far more valuable to the concerned public than mere weights of chemical released. Second, since EPA and other organizations rely on toxicity

⁵⁰ "Persistent Bioaccumulative Toxic (PBT) Chemicals: Briefing for the Department of Energy and the Office of Management and Budget," October 15, 1998.

⁵¹ For polychlorinated biphenyls, polycyclic aromatic compounds and fluoranthene, thresholds of 100 pounds (or even 1,000 pounds) rather than the proposed 10 pounds, would capture 99 percent of all throughput from combustion sources. SBA December 8 memorandum, *op. cit.* p. 5.

equivalents rather than grams in other programs, the information is more directly relevant for informing policy decisions.⁵²

EPA recognizes these advantages in the preamble, noting that toxicity equivalents are based on toxic equivalent factors, which “have been considered by EPA and the international scientific community to be a valid and scientifically sound approach for assessing the likely health hazard of dioxin-like compounds.” It also notes that the potential health risks of the various dioxin and dioxin-like compounds (as measured by toxic equivalent factors) vary by a factor of 500. Thus, the proposed gram-based reporting requirements would provide the public no information on the wide-ranging potential for health hazards from releases of different dioxin compounds. Despite these advantages to the toxic equivalent approach, EPA is concerned that reporting in toxicity equivalents could (1) result in inaccurate year-to-year comparisons if the underlying toxic equivalent factors changed over time, (2) pose reporting difficulties for some facilities, and (3) confuse the public, since other reporting is all done by weight. The third concern is clearly dwarfed by the confusion that would ensue if all dioxin-like compounds were reported as equivalent, when the hazards vary by a factor of 500. Moreover, since the proposal would require dioxins to be reported in grams, rather than pounds as other TRI chemicals are, this argument is weak. The other two concerns also appear weak in light of the much greater risk information provided by a toxic equivalent approach. EPA should not only consider reporting in toxicity equivalents; it should also define the reporting threshold based on toxic equivalence rather than weight.

Coverage of industrial sectors

Several of the PBT chemicals covered by the proposal are largely a concern for combustion sources. For example, EPA’s Mercury Study Report to Congress estimates that combustion sources account for 86.9% of mercury emissions.⁵³ Interagency memoranda suggest that combustion accounts for the majority of releases of polycyclic aromatic compounds, polychlorinated biphenyls, and vanadium, as well.⁵⁴

EPA should examine the impact, in terms of both quantities reported and reporting burden, of targeting TRI reporting requirements at sources that comprise the majority of releases. This could take the form of exempting non-combustion sources from reporting of certain PBTs, or extending the “manufacture only” exemption proposed for dioxin to other PBTs.

Elimination of options for streamlined reporting

EPA proposes not to allow reporting on the simpler Form A for PBT chemicals on the grounds that smaller releases of chemicals that persist and bioaccumulate in the

⁵² The Office of Management and Budget and the Small Business Administration made this recommendation during the course of interagency review. See SBA December 8 memorandum, *op. cit.* and December 3 memorandum from Susan Hazen to Art Fraas.

⁵³ Mercury Report, *op. cit.* Table ES-3.

⁵⁴ See, for example, SBA December 8 memorandum, *op. cit.* p. 9.

environment could pose health and environmental risks. However, rather than eliminating the applicability of the Form A, EPA should consider establishing an alternate reporting threshold for these chemicals. At a minimum, an alternate reporting threshold of 10 to 100 pounds would be consistent with the throughput-reporting threshold proposed for all PBTs except dioxins. The Small Business Administration's analysis suggests significant reductions in burden associated with alternate reporting thresholds of 50 pounds for PBTs. Based on a study it commissioned of petroleum bulk plants, which it estimates will be the largest group of reporters under this proposal, it finds that most of the reports avoided by this alternate threshold would reflect zero releases.⁵⁵

Benefits of the proposal

The Economic Analysis presents a case study of “the potential benefits of more accurate, complete, and consistent PBT chemical reporting in the Great Lakes Basin” to “stylistically illustrate the incremental benefits of the proposed rule ... through opportunities for improved decision making and policy design.”⁵⁶ From this case study, however, one can glean two insights, (1) a national reporting requirement is *not* necessary to address the largely regional concerns associated with PBT releases, and (2) the key perceived benefit of adding PBT chemicals to the TRI is to facilitate more regulation of these chemicals.

The Economic Analysis asserts that the uniform national reporting of PBT chemical releases would be superior to the “undesirable and inefficient ... patchwork of differing state laws.”⁵⁷ However, PBT chemicals are a concern because they bioaccumulate in fish and in animals that consume fish and thus pose the greatest potential risks to water bodies. Water bodies are largely regional concerns, which are best addressed by regional efforts that can tailor the information requests to specific concerns. As the Great Waters, Great Lakes and Chesapeake Bay initiatives reveal, states can and do work together to research and set policies to protect shared natural resources.

Furthermore, transportation of chemicals across state boundaries is largely a concern with air emissions and not releases to soil or water. Dioxins, for example, bond to soil and do not move. Given existing emission inventories, ambient air data, and transport modeling efforts for air toxics,⁵⁸ it seems unlikely that the requirements of this proposal will provide more relevant data.

⁵⁵ *Ibid.*, citing “PBT Releases from Petroleum Bulk Stations are Small,” Policy Planning & Evaluation, Inc., December 7, 1998.

⁵⁶ Economic Analysis, pp. 6-33 – 6-50.

⁵⁷ Economic Analysis, p. 6-48

⁵⁸ For example, the Great Lakes Air Toxics Emissions Inventory already provides a source of information on sources and emissions for 49 toxic chemicals in the region. EPA studies such as the Mercury Study, inventories for CAA sections 112c(6) and 112(k), and data collected for MACT standards also provide information that is likely to be more reliable.

The Economic Analysis also suggests that society will benefit from further regulation of PBT chemicals. However, as noted above, any further regulatory or enforcement actions facilitated by TRI information has associated costs as well as benefits, so it is misleading to attribute only the potential benefits of subsequent actions to this rule. In the PBT chemicals case study, EPA expects the information to aid in monitoring and tracking of U.S. progress toward meeting the goals of international agreements, as well as regional goals, however, the discussion provides no evidence that compliance with these regional and international goals would represent net social benefits.

Furthermore, the Economic Analysis presumes that the “detailed information on release sources” would “improve efforts to understand the transport of PBT chemicals.” However, the quality reviews of the TRI, discussed in Section III above and in Appendix 2, reveal that while the database may reasonably predict aggregate national releases across chemicals and locations, it is neither sufficient nor accurate enough at a facility and pollutant level to guide specific analysis on emission points and transport patterns, as envisioned in the Economic Analysis case study.

Conclusions and Recommendations

This section presents RSP’s conclusions and makes recommendations for improving TRI in general, and the PBT proposal in particular. Appendix 1 contains the RSP Checklist, which provides a consistent framework by which policy makers and interested reviewers can evaluate this action, and the analysis supporting it, and compare it to other federal regulatory actions.

EPA’s goals for TRI are not adequately linked to health and environment.

Informing the public about hazards in their community is an intuitively desirable social goal. However, 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*, has not been addressed. 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.

The TRI does not achieve the stated goals.

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.

The PBT proposal will not provide benefits commensurate with costs.

EPA's proposal to reduce reporting thresholds for certain PBT chemicals is not supported by available data. 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.

EPA expects the cost of the reporting required by the proposal to be \$128 million in the first year, and \$71 million in subsequent years. The Economic Analysis supporting the proposal does not present any direct benefits of the new reporting requirement, but justifies it qualitatively on the grounds that it will increase available information and facilitate further regulation of these chemicals. However, this overlooks the fact that for several of the key chemicals subject to this proposal, extensive release data have already been compiled. EPA does not justify the need for additional, arguably less accurate, release information from TRI. Moreover, the analysis 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 rule attributes qualitative benefits could, in reality, impose net social costs.

Recommendations

The TRI has been in place now for over a decade. 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 PBT proposal does not appear to have benefited from the experience of the last ten years, nor from information made available through various other agency efforts to reduce health and environmental risks from toxic chemicals. Below we provide several recommendations for making TRI more responsive to American citizens. The first three recommendations address improvements in the TRI generally, while the next six recommendations suggest ways to modify the current proposal.

1. Examine the value of reported data.

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. Perhaps EPA's concern about PBTs argues for keeping those thresholds at their current levels, but *raising* thresholds for non-PBT chemicals.

2. Consider altering the reporting frequency.

EPA requests comment in the proposed PBT rule on modifying the reporting frequency pursuant to EPCRA Section 313(i) for certain chemicals or certain facilities. EPA should consider this seriously. 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.⁵⁹

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.⁶⁰ 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 recommends 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.”⁶¹

3. Examine accuracy of collected data.

EPA has conducted two data quality reviews of TRI reporting, which suggested significant errors in reported releases. They also reveal that, despite extensive outreach, guidance documents, built-in error checking, and electronic reporting that have evolved between 1987 and 1995, 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.

4. Reconsider selection of PBT chemicals.

EPA should not include dioxin, mercury, vanadium and cobalt in this rule. Dioxin and mercury have been the subject of extensive study and EPA already has emission

⁵⁹ PBT Proposal, p. 719

⁶⁰ EPA, “1991 Toxics Release Inventory – Public Data Release.” 1991, p. 163.

⁶¹ SBA December 8 memorandum, *op. cit.* p. 6.

inventories for these chemicals. Since TRI data will not be based on new monitoring, they are unlikely to produce additional useful information to communities or policy-makers. This is particularly true given the demonstrated inaccuracy of TRI data at the facility level.

EPA's proposed approach of not lowering thresholds for vanadium and cobalt appears justified. The agency's references reveal that bioaccumulation is a not significant concern for either metal, and the Office of Solid Waste has excluded these metals from its most recent lists of bioaccumulative toxics.

5. Use persistence and bioaccumulation criteria that are consistent with other offices and organizations.

EPA appears to have chosen criteria for persistence and bioaccumulation that capture more chemicals than criteria used in other settings, on the grounds that the purpose of TRI is to provide communities with "relevant information" on releases "that may present a hazard." However, more information is not necessarily more valuable nor more relevant to communities. EPA should take seriously its responsibility for informing, but not alarming, communities. Given the extensive information available to EPA on PBT chemicals, it should ensure that the criteria defined in this rule are consistent with what other EPA offices and other organizations have considered a significant health and environmental risk.

6. Use available data to define PBT thresholds.

Given the extensive information currently available on releases of these chemicals (especially mercury, dioxin and hazardous air pollutants), EPA should carefully consider the value TRI reports will add to the public's ability to identify and track PBT releases. If, after such consideration, EPA determines that additional information on releases of these chemicals would be valuable, it should take advantage of the data it has already collected to define reporting thresholds that will (1) capture the significant releases, and (2) provide meaningful and useful information.

EPA could incorporate information on the fraction of total releases captured by different reporting thresholds to make more reasoned determinations on appropriate levels. For example, the analysis conducted by the Small Business Administration suggests that for several of the highly persistent chemicals on the list, thresholds of 100 lbs. (or even 1,000 lbs.) would capture 99 percent of all chemical use from key facilities. The SBA analysis reveals that lower thresholds for these chemicals/categories would significantly reduce reporting burden. Perhaps more importantly, more targeted reporting thresholds would provide more meaningful information to the public, consistent with Congressional intent.

7. Target reporting from key facilities.

EPA should examine the impact, in terms of both quantities reported and reporting burden, of targeting TRI reporting requirements at sources that comprise the majority of releases. This could take the form of exempting non-combustion sources from reporting of certain PBTs, extending the "manufacture only" exemption proposed for dioxin to

other PBTs, or establishing a *de minimis* exemption for PBTs. EPA has the data on most of the proposed PBT chemicals to determine what combination of these approaches would ensure that significant releases are reported without burdening facilities and communities with excessive quantities of low-value information.

8. Provide an option for Form A.

Rather than eliminating the applicability of the shorter reporting Form A, EPA should consider establishing an alternate reporting threshold for PBT chemicals. At a minimum, an alternate reporting threshold of 10 to 100 pounds would be consistent with the throughput-reporting threshold proposed for all PBTs except dioxins. The Small Business Administration's analysis suggests significant reductions in burden associated with alternate reporting thresholds of 50 pounds for PBTs. It finds that most of the reports avoided by this alternate threshold would reflect zero releases.

9. Report dioxin in toxicity equivalents rather than grams.

The preamble discusses an alternative to reporting dioxin in grams based on toxicity equivalents. Toxicity equivalents appear to offer important advantages over the weight-based approach. First, they convey risk information, which is far more valuable to the concerned public than mere weights of chemical released. Second, since EPA and other organizations rely on toxicity equivalents rather than grams, the information is more directly relevant for informing policy decisions. EPA should not only consider reporting in toxicity equivalents; it should also define the reporting threshold based on toxic equivalence rather than weight.

Appendix 1

RSP Checklist

EPA's PBT Modifications to TRI

Element	Agency Approach	RSP Comments
1. Has the agency identified a significant market failure?	<p>EPA justifies this proposal and the TRI in general with concerns about externalities and information asymmetries.</p> <p>Fair</p>	<p>EPA's discussion of market failure is generally sound, but it neglects the key fact that information is a good, and like other goods, it is costly to produce. 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 uses.</p>
2. Has the agency identified an appropriate federal role?	<p>The Economic Analysis states that uniform national reporting of PBT releases is superior to the "undesirable and inefficient ... patchwork of differing state laws."</p> <p>Unsatisfactory</p>	<p>PBT chemicals are a concern because they bioaccumulate in fish and in animals that consume fish and thus pose the greatest potential risks to water bodies. Water bodies are largely regional concerns, which are best addressed by regional efforts that can tailor the information requests to specific concerns. As the Great Waters, Great Lakes and Chesapeake Bay initiatives reveal, states can and do work together to research and set policies to protect shared natural resources.</p>
3. Has the agency examined alternative approaches?	<p>The Economic Analysis estimates the burden associated with different thresholds, but not the benefits.</p> <p>Unsatisfactory</p>	<p>EPA should consider a wider range of alternatives, including raising the thresholds for non-PBT chemicals. It should also estimate, at a minimum, the volume and fraction of releases that would be captured under different thresholds.</p>

Element	Agency Approach	RSP Comments
4. Does the agency attempt to maximize net benefits?	<p>The Economic Analysis quantifies increased paperwork costs, and presents a qualitative discussion of potential benefits.</p> <p>Unsatisfactory</p>	<p>The benefits attributed to the proposal accrue from subsequent activities facilitated by the TRI information, which also involve costs that may well exceed the benefits of the activities. Without a more objective and thorough analysis, one cannot determine whether the net social impact of TRI is positive or negative.</p>
5. Does the proposal have a strong scientific or technical basis?	<p>EPA proposes to lower PBT thresholds because they remain in the environment and accumulate in animal tissue.</p> <p>Unsatisfactory</p>	<p>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. The logic supporting lowering thresholds could just as reasonably support <i>raising</i> thresholds for all other chemicals.</p>
6. Are distributional effects clearly understood?	<p>EPA examines the paperwork impact on small businesses as a fraction of profits. It asserts net benefits to low income and minority populations, and children.</p> <p>Unsatisfactory</p>	<p>The distributional impacts are superficially evaluated. The Economic Analysis supporting the proposal makes no attempt to examine the costs or benefits to low income and minority populations or children, nor does it recognize the redistribution of wealth that results from requiring the release of private information.</p>
7. Are individual choices and property impacts understood?	<p>The proposal does not consider individual liberties or property rights.</p> <p>Unsatisfactory</p>	<p>Absent a compelling public need, private entities should not be required to release private information broadly to the public, including competitors and potential saboteurs.</p>

Appendix 2

Accuracy of TRI data

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,⁶² and one of the 1994 and 1995 reporting years,⁶³ attempted to check the accuracy of reported releases at a sample of facilities. For these checks, EPA contractors conducted site visits at over 100 cooperating facilities to examine their records and recreate their TRI release estimates.

The earlier 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. (Most of these errors were due to over-reporting of releases.) More than one-third of water discharges and on-site land releases were off by more than a factor of ten. Additionally, the site visits suggested that five percent of the release numbers that were reported as zero were incorrect. The highest incidence of incorrectly omitting releases occurred with air emissions. 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*.” (Emphasis in original.)

The recent report covering the 1994-1995 reporting period, while based on the same site-visit approach as the earlier report, obfuscates statistics on errors by reporting on a total facility basis, rather than a chemical-by-chemical basis. In other words, as the report notes, “[i]f a facility underestimated the release of a chemical by 1,000, but overestimated the release of another chemical by 1,000 lbs, the errors would cancel and would not be identified in this analysis.” To make comparisons with the earlier report more difficult, the 1994-1995 report presents the frequency of reports that differed from site-survey estimates by up to a factor of 2, but not the frequency of larger errors (a factor of 10) that were reported for the 1987 inventory.⁶⁴ EPA should make public the data underlying these two reports, or at least present statistics in a comparable manner, so that reliable comparisons between the accuracy of TRI data between 1987 and the present can be made.

Despite the drawbacks of the 1994-1995 presentation, the recent report offers two pieces of information that allow comparisons which suggest that the quality of the data has not improved since release information was first required in 1987.

⁶² 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.

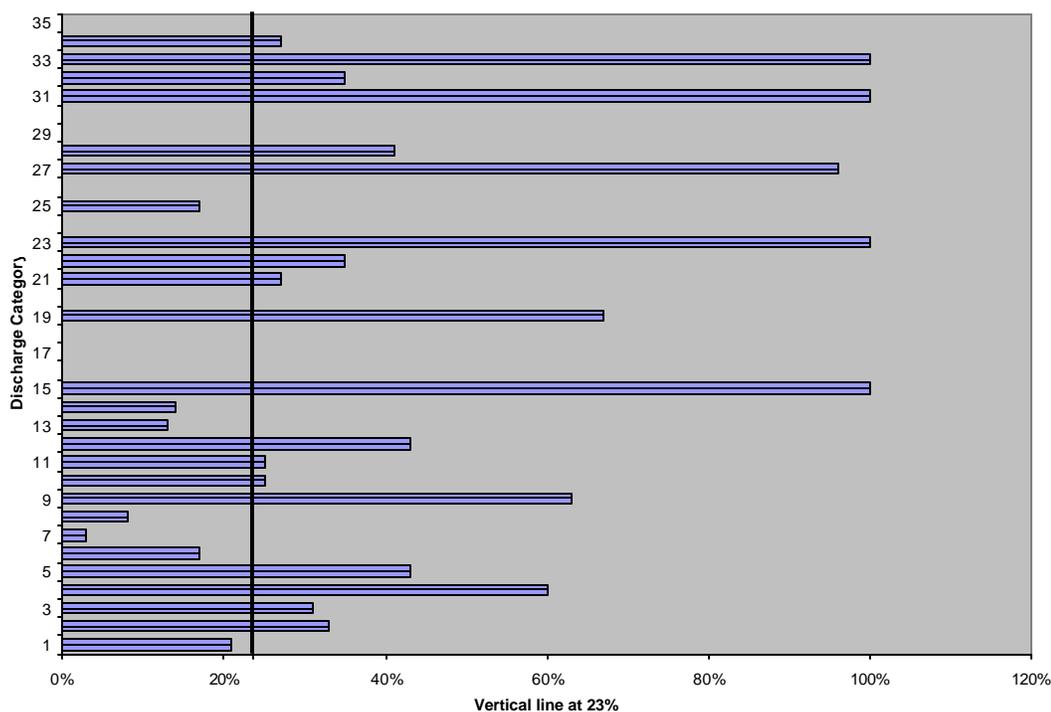
⁶³ EPA, *1994 and 1995 Toxic Release Inventory Data Quality Report*, EPA 754-R-98-002, March 1998.

⁶⁴ In other words, given a distribution of the ratio of facility to site-visit estimated releases, the 1990 report presents statistics on the size of the tails of the distribution, while the 1998 report presents statistics only on the central portion of the distribution.

1. The 1994-1995 report presents the percent of facilities, by SIC code and emission category, for which the difference between facility- and site-surveyor-estimated facility-wide emissions was more than 50%. This statistic is equivalent to the reported 1987 statistic on the percent of reported releases that differed from site-surveyor release estimates by more than a factor of 2.⁶⁵ Since this statistic is reported by SIC code and emission category for the 1994-1995 data, we have no estimate of the total frequency of errors greater than a factor of 2 across all facilities with which to compare to the 23 percent figure from the 1987 TRI. However, judging from the errors reported by SIC code and emission category, reproduced in Figure 2-1, below, the frequency of errors of this magnitude appear to be at least as great in the 1994 and 1995 databases as in 1987.

Figure 2-1

Percent of 1994 and 1995 Reports in Which Facility and Site Surveyor Estimates Differed By More Than a Factor of 2



The numbered bars represent different waste streams for different industries. Bars 1-6 reflect the percent of reported fugitive emissions that differed from surveyed estimates by more than a factor of 2 (from EPA March 1998 report, *op. cit* Table 5-18). Bars 7-12 reflect stack air emissions (Table 5-19); bars 13-15 reflect discharges to receiving streams (Table 5-20); bar 16 reflects underground injection (Table 5-21); bars 17-19 reflect release to land on site (Table 5-22); bars 20-24 reflect discharges to publicly owned treatment works (Table 5-23); bars 25-29 reflect off-site disposal (Table 5-24), and bars 30-34 reflect off-site treatment (Table 5-25).

⁶⁵ Note that these statistics are not directly comparable since the 1998 report combines releases across all chemicals at a facility, thus understating errors compared to the 1990 report.

2. The recent report also presents a table listing the percent difference between facility-estimated and site-survey-estimated facility-wide releases for reporting years 1987, 1988, 1994 and 1995. This table corroborates the suggestion that the accuracy of the TRI data has not improved significantly since 1987. While the percent difference statistics reported in this table, reproduced below, appear small, they reflect aggregate figures which EPA admits mask significant errors in individual reported releases. Recall that 23 percent of the reported releases in 1987 were off by a factor of 2, and 16 percent were inaccurate by a factor of 10, yet the figures reported in this table show only a 2.2 percent error in the aggregate 1987 estimates.

Table 2-1

Percent Difference* of Facility Estimated and Site Surveyor Estimated
Total TRI Releases and Transfers⁶⁶

TRI Reporting Year	Percent Difference
1995	-1.2%
1994	-6.7%
1988	1.1%
1987	-2.2%

* Percent difference = (facility estimate – surveyor estimate)/surveyor estimate x 100.

⁶⁶ Table 5-17, March 1998 report, *op. cit.*