TRI: A First Step

The most revolutionary aspect of the Toxics Release Inventory (TRI) was not the reporting requirement per se. It was the two sentences, tucked away near the end of the bill, that required the U.S. Environmental Protection Agency (EPA) to “establish and maintain in a computer data base a national toxic chemical inventory...and make these data accessible by computer telecommunications and other means to any person.” This was written years before the Internet existed as a public medium and at a time when very few people accessed any kind of information by computer telecommunications.

In a sense, this is democracy in its purest form. Give everyone open access to information they consider important, and then let society sort out its preferences without relying on government intervention. Although hardly anyone paid any attention to this provision at the time, it represented the policy heart of the bill. TRI has performed pretty much as its drafters expected it would. It was intended to bring about behavioral changes and create a new way to think about improving environmental performance. TRI has proven popular and powerful because it involves information that many people care about, and it serves a deeply felt social value related to public safety and environmental stewardship.

Despite its revolutionary premise, TRI was just a crude first attempt—an experiment with a new approach. In their article “Disclosure of Toxic Releases in the United States,” in the October issue of Environment, Mary Graham and Catherine Miller do a good job describing the limitations inherent in TRI’s design, as have others. It is the product of political compromise, as they note. It is a first step rather than an elegant final solution. Although TRI is something of a blunt instrument, it has been enormously valuable not only in terms of reductions (whatever their level) but also by creating the opportunity for a detailed discussion of emissions and recycling trends, as Graham and Miller’s article does. This is important information.

Now comes the challenging question: What next? People who work on information policy matters seem to be talking mostly about “one-stop reporting,” improving data quality, creating a context for release information, and so forth. Their efforts, while important, are aimed at consolidating information gains already made. These are important issues, but they do not encourage us to make the next leap forward. Where would that be?

TRI represents a big idea in terms of direct public access to information, but it says little about the overall environmental performance of industry—what some have called the “environmental footprint.” This footprint includes every aspect of corporate behavior that affects the environment—for good or ill—and consequently affects the future quality of life nationally and globally. Routine release of toxic chemicals is but one narrow parameter by which to measure a company’s environmental footprint. Other factors that determine the size of the footprint would include materials sourcing policies, energy source selection, life-cycle product design, and much more.
In addition to traditional information rules—which, arguably, are not a good tool for such broad reporting—we could consider as well the reciprocal of “right-to-know”: the “duty to inform.” We could argue that companies of all types (not just TRI reporters), by virtue of their potential impact on a shared biosphere and geosphere, have a duty to inform the rest of us about their activities that potentially affect the global commons. This is not a new idea; it is inherent in corporate environmental reporting initiatives. But portraying it as a public duty applies some helpful pressure while expanding the arena of discussion. (There are inherent limits to “right-to-know” as a justification for rule-making, once you get past chemical risk—does every person have a right to know about energy selection, for example?)

Perhaps we could argue that companies should institute information-stewardship programs similar to product-stewardship programs. After all, environmental performance information is also an important product for which there is a market. Codes and standards similar to those of the International Standards Organization (ISO) that define good management practices might be used to define not the precise information outcome but the characteristics of a transparent management process that would lead to a desirable information outcome. Compared to an information rule, we would have to trade flexibility in the information produced to get more information in the long run. None of this should detract from right-to-know and other information-reporting rules. But my experience working with TRI is that companies that might step forward if encouraged instead hold back.

It is hard for companies to break ranks and support disclosure rules over the objection of the vocal minority. What we need, in addition to rule-driven right-to-know programs, are better ways to give “political permission” for those companies that are willing to be more forthcoming to do so. Standards-based duty-to-inform program to encourage release of footprint information might produce a lot of data that are not confidential—and not about chemical risk—but valuable nonetheless. When considering the whole footprint, that’s most of what we now lack.

And when we get those data, we need to manage them just as we do TRI—with direct public access.

What is most striking about Mary Graham and Catherine Miller’s discussion is not the points they make, but the ease and confidence with which they sift the data. As they pick out key industrial sectors that are responsible for trends, track the rise and fall of releases of particular chemicals, or compare averages of facility emissions in different places, they take their data-access and -manipulation capabilities for granted. In fact, despite their skill, Graham and Miller actually underrepresent the general public’s ability to slice and dice TRI data at will. To illustrate: In the county where one of Environment’s editors grew up, 19,802 pounds of suspected kidney toxicants are released annually into the air, primarily from two facilities and primarily in the form of methyl ethyl ketone. The same county’s overall TRI air releases are down 97 percent from their 1990 high, and they are less than 1 percent of the methyl ethyl ketone air emissions in Jefferson County, Texas, which has the nation’s highest level of kidney toxicants.

In Hamblen County, Tennessee, the highest-ranked county for releases of suspected endocrine toxicants, the key chemical is carbon disulfide. One facility there releases as much as the next three highest emitters in the United States combined. Those four top emitters released more than the combined amount of releases from all 89 other facilities that emit carbon disulfide in the United States. None of the above facts took me more than 60 seconds to locate on the Internet.*

Nor, despite the authors’ focus on the Toxics Release Inventory, is this accessibility is limited to TRI data. Equally quick examples from non-TRI sources include:

- On the editor’s childhood street corner, the added cancer risk from hazardous air pollutants (HAPs) is now 1,300 per million, com-

1. M. Graham and C. Miller, “Disclosure of Toxic Releases in the United States,” Environment, October 2001, 8-20.
2. The author was a principal staff author of the TRI legislation, supporting Senator Robert T. Stafford (R-Vt.), then chairman of the Environment and Public Works Committee. Since 1987, he has served as a consultant to various companies and trade associations on information policy matters.

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perhaps to the county’s average of 1,500 per million, a statewide average of 2,000 per million, and a national average of 760 per million.3

• Nationwide, diesel exhaust presents four times as much cancer risk as all other HAPs combined, based on the U.S. Environmental Protection Agency’s (EPA) most comprehensive data set.4 On the editor’s old street corner, diesel represents 79 percent of the total added cancer risk from HAPs.

• More poultry waste (chicken and turkey feces from factory farms) is produced in Rockingham County, Virginia, than in any other county in the country; the second-highest producer is Sussex County, Delaware.5

This kind of access would have been unthinkable a few years ago to even the most dedicated journalist, much less available to anyone with a keyboard and a connection to the Internet. In the pollution field, as elsewhere, the pace of data democratization is revolutionary.

The examples above come from the Scorecard web site, which is built and managed by the private nonprofit group Environmental Defense. (The Scorecard site was profiled in the article by Graham and Miller.)6 EPA’s new on-line service, TRI Explorer, is beginning to follow suit, with multiple sorting options at different geographic levels—if not actual rankings—and presumably more to come.7 A follow-up article might project forward from this trend and consider the policy implications.

At the same time that Graham and Miller underestimate how many different analyses are now possible, by how many different participants, they overstate the awareness of disclosure as a policy tool for addressing pollution problems.

In fact, the handful of academic articles on this subject focuses almost exclusively, and very narrowly, on TRI itself.8 All sides tend to think of policy options in terms of simply extending TRI, rather than reconsidering what the most effective potential disclosures might be in light of current information and technology.9

TRI’s limits as an index of environmental health are well known, and they are starkly illustrated by analysis of the added cancer risk from HAPs that was made possible by EPA’s Cumulative Exposure Project (now superseded by the National-Scale Air Toxics Assessment).10 From the cancer-risk angle, point sources (i.e., TRI facilities) are responsible for only 4 percent of the total risk, while mobile sources such as cars and trucks contribute 88 percent of the total. Even in well-known “Cancer Alley” industrial zones, TRI numbers alone are clearly not telling the real story on air-pollutant health risk to people breathing the local air.

Perhaps the greatest potential benefit of all this public information, imperfect as its pieces are, is its ability to guide priorities. In some cases, analysis makes priorities blindingly obvious—for example, the dominance of diesel exhaust among health-threatening chemicals in the air. Even staying entirely within the limits of what TRI can measure, health-related concerns turn out in most cases to be disproportionately driven by a tiny handful of chemicals and relatively few facilities. Systematic analysis to identify high-priority targets, at any jurisdictional level, is within the capability of anyone with a reasonably fast Internet connection and half an hour to play with the various automated ranking options.11 For TRI-type industrial emissions, the same capability now exists for Canada as well.12

1. M. Graham and C. Miller, “Disclosure of Toxic Releases in the United States,” Environment, October 2001, 8-20.
2. Each example is taken from the Scorecard web site, http://www.scorecard.org. The site includes multiple layers of data, each reachable from the home page (“Toxic Releases from Manufacturing Facilities” is available for TRI-related data) and each with extensive analysis, including rankings, shown at various geographic levels, including national, state, county, and, in some instances, zip code and individual census tract. The same data are also reachable from the home page using the “Find Your Community” feature and selecting the desired topic from the community-level summary. Alternatively, rankings can be accessed directly via the “Pollution Rankings” feature (http://www.scorecard.org/ranking/) by choosing one of the pull-down options. National-level figures are from the national-level report for hazardous air pollutants (HAPs) (http://www.scorecard.org/env-releases/hap/us.tcl). Data for individual chemicals can be seen by disaggregating any total number shown in any report. For the Hanbloss County example above, clicking on the number of pounds shown for “suspected endocrine toxicants” (14,205.592) will disaggregate the total into individual chemicals.

3. Data for individual census tracts, using the Scorecard’s map viewer, starting with any state or county HAP report and clicking on the name shown under “Map Locating Hazardous Air Pollution.”

4. In Scorecard’s national-level report for HAPs, disaggregate the 760 figure, or get directly to http://www.scorecard.org/env-releases/hap/cancer-risk?geo-area-type=us&geo-area-id=us. The underlying data are from EPA’s National-Scale Air Toxics Assessment (see http://www.epa.gov/ttn/atw/nata/natsaov.html), the successor to its Cumulative Exposure Project (CEP). CEP provides exposure data on 148 HAPs, focusing on what CEP showed to be most important, NATA provides exposure data for 32 HAPs plus 8 other toxic air contaminants.
Hormone Disruptor Tests on Animals

Doing the same thing again and again and expecting different results is a classic definition of insanity. It is therefore quite disheartening to hear the clamor by some environmental organizations for more and more animal testing at the U.S. Environmental Protection Agency (EPA) as the answer to our current chemical mess (see Sheldon Krimsky’s article “Hormone Disruptors: A Clue to Understanding the Environmental Causes of Disease,” in the June 2001 issue of Environment).1

Despite calling for change in the way we manage industrial chemicals, Krimsky’s article failed to challenge a root cause of our ineffective approach to regulating dangerous chemicals. In more than a decade, EPA has not banned a single toxic industrial chemical using its authority under the Toxic Substances Control Act, despite killing hundreds of thousands of animals in cruel chemical toxicity tests in which chemicals are injected into animals’ stomachs, forced down their throats, and poured into their eyes and onto their skin. Chemicals such as benzene and trichloroethylene are tested and retested ad infinitum. Such excessive testing is the bureaucratic alternative to taking action—reducing emissions and preventing exposures—on chemicals we already know are dangerous.

The chemical industry goes along with these endless animal tests, as they serve to delay regulation—and the test results are always subject to interpretation and challenge in the courts. If chemicals such as atrazine or phthalates are shown to cause cancer or other harmful effects during animal testing, industry representatives claim the results aren’t applicable to humans. Yet company officials happily display the results of EPA-required studies that show their chemicals are not harmful. In these cases, companies laud the predictability of animal studies and claim their products are safe for humans.

Nonanimal tests are often faster and cheaper—and their results are less subject to manipulation—but they are underfunded and ignored. For example, non-animal genetic toxicity-screening tests are more sensitive and are therefore required by regulatory authorities in England and Germany, but—until challenged by People for the Ethical Treatment of Animals (PETA)—EPA required animal tests. It is not surprising that industry prefers the ambiguous results of the animal tests, but it is astounding...
EPA has ignored a recommended nonanimal test that could rapidly screen many of the chemicals and vastly reduce the number of animals killed.

EPA is so reliant on animal testing that even when evidence from human epidemiological studies implicates a chemical, the results are ignored. For years, population studies showed that arsenic in drinking water causes cancer in humans. Yet EPA dragged its feet for more than 20 years while thousands of animals were killed in tests that attempted to reproduce the effects already documented in humans.

Now comes EPA’s endocrine-disruptor screening program. Although the article by Krimsky states that EPA “is committed to minimizing the number of animals used in the program,” the fact is that 600,000 to 1.2 million animals will be killed for every 1,000 chemicals tested—making this the largest animal-testing program in history. EPA has ignored a recommended nonanimal test that could rapidly screen many of the chemicals and thus vastly reduce the number of animals killed in the program. EPA also refuses to subject the proposed animal tests to the same rigorous scientific scrutiny for reliability and relevance that the nonanimal tests must undergo—rendering the animal test results useless as a basis upon which to regulate. Yet some environmentalists are pushing the same approach of repeated animal testing that has always been used and expecting it to yield different results.

A recent National Toxicology Program review of the low-dose endocrine effects of bisphenol A (a common ingredient in plastic bottles, food containers, and dental fillings) provides a clear case in point. Reviewers found both positive and negative bisphenol A animal studies “credible.” While some scientists insist that bisphenol A is clearly an endocrine disruptor at low levels, several multimillion-dollar, multigeneration animal studies failed to show any such effect. Even in such extensive, well-funded studies, the results of bisphenol A tests on animals contradict each other. The same saga is repeating itself with other chemicals. This should come as no surprise, considering that recently published reports indicate that even different strains of the same species exhibit drastically different hormonal effects from chemicals. Even minor changes in experimental conditions, such as lighting, noise, whether animals are housed alone or in groups, and the relative position of animals in the womb before birth have been shown to significantly alter test results.

While animals are choking on chemicals in EPA-mandated tests, EPA is choking on its own inertia and inaction. The campaign against these do-nothing testing programs is as much an environmental issue as one of animal rights. There is simply no excuse for poisoning animals for data that will not protect the public or the environment. In the interests of ethics, good science, and the protection of our children, EPA must stop killing animals.

1. S. Krimsky, “Hormone Disruptors: A Clue to Understanding the Environmental Causes of Disease,” Environment, June 2001, 22-31.
2. J. F. H. Purchase, “Ethical Review of Regulatory Toxicology Guidelines Involving Experiments on Animals: The Example of Endocrine Disruptors,” Toxicological Sciences 52 (1999): 141-47.
3. National Toxicology Program, “Endocrine Disruptors Low Dose Peer Review,” August 2001.
4. J. Ashby and B. M. Elliot, “Reproducibility of Endocrine Disruption Data,” editorial, Regulatory Toxicology and Pharmacology 26 (1997): 94-95; “Hormone Studies Flawed, Researcher Warns,” Chemistry and Industry, 19 October 1999; National Research Council, Hormonally Active Agents in the Environment, National Academy Press (Washington, D.C., July 1999); and A. M. Ballard, “Standard Testing Protocol Said Needed to Adequately Determine Chemical Effects,” Bureau of National Affairs Environment Reporter, 11 October 2000, and P. Phibbs, “Report Urges EPA to Revisit Guidelines for Detecting Hormonal Effects at Low Doses,” 15 May 2001.
5. For more information on the U.S. Environmental Protection Agency’s testing programs, visit the website of People for the Ethical Treatment of Animals at http://www.peta.org.

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