
A Failure To Engage

By refusing to enter the debate over the way quantitative risk assessment is conducted, accepting some form as inevitable, environmentalists are missing important opportunities to protect public health better

ALON TAL

Last year, after almost a decade of preparation, the Environmental Protection Agency issued new proposed guidelines about how to conduct cancer risk assessments. No less important than the changes — which would roll back many of the “conservative,” or protective, assumptions that have been built into risk assessments to date — is what is lacking in the new guidelines. The heated campaign waged by many in the environmental movement to dislodge quantitative risk assessment because of its supposed practical, ideological, and scientific fallacies is hardly reflected in the revisions the agency is proposing. Twenty years after EPA began conducting quantitative risk assessment, the verdict seems clear: QRA is here to stay.

Even before the 104th Congress turned risk assessment into a partisan issue through bills that called for massive expansion of QRA's role in environmental regulation, the practice had emerged as an integral part of the American regulatory reality. The remarkable success of environmental organizations in quashing the QRA component of the Contract With America's legislative package notwithstanding, environmental health today is increasingly defined in terms of risk.

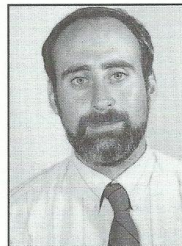
Maximum risk levels are formally written into numerous state environmental statutes as well as the 1990 Clean Air Act, while narrative risk standards appear in federal laws such as the Toxic Substances Control Act and the Federal Insecticide, Fungicide, and Rodenticide Act. Even when not specifically mentioned in statutory language, QRA has emerged as a central part of EPA's implementation of almost every other law, codified through a variety of regulations. Beyond the EPA context, the Departments of Agriculture, Defense, Energy, and Labor and practically all state governments use risk assessments in some form when they struggle with issues

involving the severity of pollution exposures. Given the leadership role that America plays internationally, EPA “red book” style risk assessment — the name comes from the red cover of the 1983 National Academy of Sciences report *Risk Assessment in the Federal Government: Managing the Process* — is even implemented in various forms by several environmental ministries abroad, particularly in Eastern Europe.

The continuing absence of a strong environmentalist presence in the risk assessment debate has created a major effectiveness gap in the public interest community's ability to influence environmental policy. A survey I conducted of 33 national and local environmental groups in the United States after the proposed cancer risk guidelines revisions were announced revealed a wide consensus in many areas. Environmental leaders, organizers, and scientists at all levels cite similar examples of inappropriate and often disingenuous QRA abuse and improprieties. They see the practice as one that accepts pollution as a given, making pollution prevention measures more difficult to implement. The experience left many of those once indulgent to the discipline with tremendous discomfort about risk assessment's present role — and its future.

Yet by failing to solidify their position and actively enter the debate about QRA — which would mean accepting some degree of risk assessment in environmental and health and safety regulation — environmentalists opposed to, or at least wary of, its use have created a policy vacuum into which industry's position, which embraces QRA wholeheartedly, has flooded. Consequently, the opposition of environmental groups to risk assessment may not only have led to proposed EPA guidelines that expand the use of QRA, they may have allowed guidelines that are much less protective than if they had been

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willing to engage in the debate. The result would have been much better, from their point of view, had these environmentalists worked with industry and EPA and to produce a more useful and protective QRA methodology.

The environmental movement's failure to articulate clear positions concerning risk assessment methodology requires a strategic reconsideration. By entering the technical QRA debate, environmentalists can keep risk estimates conservative and put a leash on the numbers, stopping them from taking on a "life of their own" and hijacking the decision making process. To do otherwise and remain locked in the realm of polemics regardless of the merits is to abandon a substantial part of the playing field on which environmental health decisions are made.

Given the spectrum in the U.S. environmental movement, it is difficult to identify a monolithic view about all aspects of risk assessment. Yet, most groups share a fundamental criticism about a range of issues.

Almost universally, environmentalists feel that present risk assessment procedures implicitly underestimate risk while never explicitly acknowledging it. Risk assessments misrepresent the actual hazard posed by an emissions stream by focusing on a single chemical. Research published in *Science* magazine last June documents the prevalence and power of synergism when small concentrations of certain hazardous chemicals known as endocrine disruptors act in concert. The findings confirm a basic tenet of the environmentalist view about toxics — the sum of the hazard is greater than its parts. Yet, our current methodological limitations force risk assessments into the narrow realm of single chemical exposures that in no way resembles the toxic cocktail most populations breathe and drink.

Excessive emphasis on carcinogenesis has led to inadequate characterization of other health impacts, in particular endocrine disruption. As ELI's Paul Locke writes: "From a scientific perspective, emphasis on cancer means that other health effects may be downplayed, or even worse, ignored." Lois Gibbs, the Love Canal activist and founding director of the Citizen's Clearinghouse for Hazardous Waste, equates present assessments to the proverbial fool looking for his keys under a

street light where he can see, even though he knows he lost them further down the block where there is no light. Recent findings of the endocrine disruption associated with a broad variety of chemicals are at the top of many environmental agendas and provide an extremely high profile validation of a position the groups have taken for years.

The enormous uncertainty characterizing most analyses is invoked by environmentalists at least as frequently as by industrial advocates when criticizing risk assessments. Certain evocative examples highlighting the unreliability of QRA are cited repeatedly. For example, in 1994, *Rachel's Environmental and Health Weekly*, a major source of information to grass-roots activists across the country, featured the enormous uncertainties in a non-environmental (and presumably more reliable) risk assessment about the impact of a flaw identified in Intel's Pentium chip. Intel's optimistic assumptions projected a single error occurring once in 27,000 years — IBM, the pessimistic competitor, estimated miscalculations every 24 days.

Greenpeace scientist Joe Thornton, testifying in Congress, repeated the analogy that the orders of magnitude characterizing the range of many risk estimates can be compared to a financial estimate that can't distinguish between paying for a cup of coffee or paying off the national debt. How is the public to accept decisions based on such disparate and ultimately confusing numbers? And everybody quotes former EPA Administrator William Ruckelshaus: "If you torture the numbers long enough, they'll tell you anything."

Other problems that bother environmentalists with present risk assessment methodology include poor characterization of cumulative effects, repeated exposures, ecological impacts, and impacts on sensitive populations. Michael McCloskey, the long-time Sierra Club chair, has recently emerged as one of the more eloquent leaders opposing risk assessment. McCloskey compiled a list of 16 critiques associated with the practice; EPA's proposed changes for the cancer guidelines do not meaningfully address most of the issues he raises.

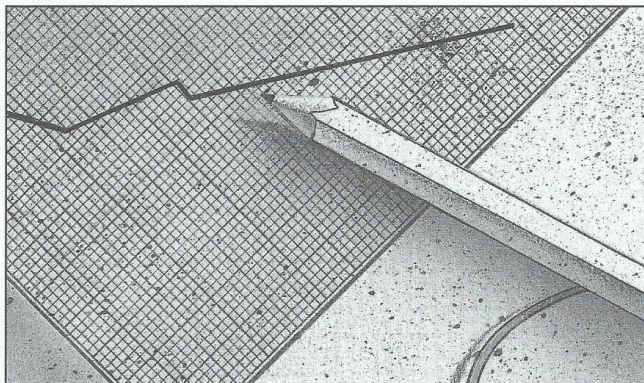
An important aspect of the environmental opposition to risk assessment is frequently framed along ethical grounds, although in this realm there is less uniformity in environmentalists' views. A small but vociferous group finds the practice morally unacceptable, abandoning exposed populations either

generally, due to their anonymity or, in the environmental justice scenario, due to their sociopolitical disenfranchisement. In the most bombastic rhetoric, risk assessment is called publicly sanctioned Russian roulette and even dubbed genocidal "where a perceived greater public good, and lack of effective

public opposition justify the sacrifice of innocent human lives," as Paul Merrell and Carol Van Strum wrote in a 1990 article titled "Negligible Risk: Premeditated Murder?" When presented along these lines, an industry emitting pollutants licensed under a risk-based standard is likened to a killer who shoots into a crowd of strangers, not knowing his victims' names.

Many environmentalists are uncomfortable with such rhetoric, seeing little difference between risk management and any other public health dilemma. Environmental Defense Fund scientist Bill Pease claims that excessive reliance on such heated ethical appeals makes environmentalists vulnerable to claims of being "anti-science." Indeed, it can be argued that highly charged polemics may detract from some of the tough moral issues that need to be raised in the struggle to ensure community participation as well as achieve adequate protection for sensitive and maximally exposed sub-populations.

Finally there are two widely held complaints about risk assessment's implications: First, risk assessment distorts the environmental debate; rather than focusing on pollution prevention and hazard elimination, attention is diverted to quantifying and implicitly accepting the problem. Secondly, there is widespread agreement that risk assessment, as practiced today, is fundamentally undemocratic. If staff scientists at environmental organizations often see the data-hungry, voluminous assessments as arcane and opaque, the lay public can hardly be expected to join the debate, much less field the technical capabilities to generate competing numbers. When risk assessment dominates the decision making, the result is a technocratic



exclusion of impacted populations from open discussions about the health of their communities.

A review of environmental publications like the Natural Resources Defense Council's *Amicus Journal* reveals that little has changed since their senior attorney David Donniger railed against risk assessment in the early 1980s. With the exception of EDF (whose position about QRA has been somewhat anomalous in environmental circles from the outset), today more organizations are repeating the same points, perhaps refining their arguments or offering new analogies. Disdainful of the practice itself, a cadre of risk assessors has not sprung up within the environmental movement to do battle with the academic and industrial experts who push the discipline away from its traditional "conservative" orientation. Fearful of a "slippery slope" dynamic, lending legitimacy to a process deemed intrinsically problematic or, more often, just concerned about getting beat, most environmental groups, both national and local, did nothing to integrate this new discipline into their substantive expertise. To engage in the process was to play into the polluters' hands, invariably leading to a nit-picking that served to delay rulings or even worse, promote deregulation.

To be sure, risk assessments that led to environmentally negative outcomes were attacked on the merits, but relatively few scientists versed in the nuances of decision theory or quantitative aspects of regulatory toxicology joined the public interest ranks. Rarely were proactive risk assessments generated to support an environmentalist position. Ironi-

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cally, in the few cases where environmentalists departed from the de facto boycott and actually conducted risk assessments to further their cause, the results have been impressive. A few examples are instructive:

- NRDC's assessment of the health impact of Alar and several other pesticides can be credited with the elimination of Alar in commercial apple cultivation;
- EDF's evaluation of lead's impact on neurological development in children expedited the phaseout in gasoline;
- Ocean County Citizens for Clean Water, a New Jersey citizens group, conducted a risk assessment that proved a key factor in promoting their proposed alternative to the Ciba-Geigy plant in Toms River.
- The EDF-sponsored risk-based Proposition 65 was voted into law in California, creating the country's most aggressive right-to-know policy;
- The Natural Resources Council of Maine's risk assessment identified the wildlife impact of dioxin-laden sludge spread on land by the paper industry, leading to a more stringent state standard; and perhaps most famously
- Barry Commoner's risk assessment of a waste incinerator in the Brooklyn Navy Yard in the mid 1980s, which stopped construction of the facility.

These examples constitute the exceptions that prove the rule. Indeed, they are often criticized within environmental circles. For instance, despite the ostensibly successful outcome, NRDC's Alar assessment is still the subject of controversy. Some environmentalists claim that the organization lost more than it gained and implicitly endorsed the EPA's strategy of pesticide registration by accepting a "chemical of the week" approach rather than forcing a broader substitution policy. (Others are delighted that today they can feed their children apple juice without Alar and hope that EPA and pesticide industries remember the sting of sloppy analysis and neglect.)

For the most part, environmental organizations limited their risk-related activities to repeating the rationale for rejection, and with the notable exceptions of EDF's Ellen Silbergeld and of Adam Finkel, during his tenure at Resources for the Future, took few stands on the salient technical issues. This created a vicious circle, leading to the perception that industry had in fact "bought" much of the risk assessment community, making QRA essentially an industrial science. The results of this disengagement are lamentable.

The proposed cancer risk guideline offers a good example of the problems of the purist QRA environmental posture. Most environmentalists are unaware of the tentative changes being suggested, and most of those who are aware remain uninvolved in providing comments. The document could have a subtle, yet profound influence throughout the world on the way the debate about toxic chemicals takes place.

For instance, under the guidelines, those chemicals today classified as "C" or possible carcinogens, may be categorized only as chemicals whose carcinogenicity "cannot be determined." The present classification scheme, that in a sense reflects "the precautionary principle," will be weakened. The upshot, a large group of chemicals for which "suggestive" but not conclusive evidence exists regarding carcinogenicity, will probably be less tightly controlled. Advocacy to prevent exposures from such chemicals will certainly be hindered. Yet, the proposal as of yet has hardly caught the attention, much less invoked a hue and cry from the environmental community, drowned out in the larger noise about the mere mention of QRA.

Indeed, environmentalists need to bolster many of the conservative assumptions in traditional QRA that have protected public health for almost two decades. These assumptions (such as continued reliance on animal data as a basis for defining carcinogenicity, default acceptance of single hit theories of genotoxicity as the basis for linearized multistage model of carcinogenesis, and the idiosyncratic lifestyle of a hypothetical "maximally exposed individuals") compensate for the systematic underestimation caused by poor characterization of multiple exposures and endpoints. With EPA yielding to calls for expanded use of pharmaco-kinetic "mechanistic" data in determining delivered dose, setting responsible and stringent decision rules for such data's inclusion is essential. But few environmental groups have taken any initiative in these areas.

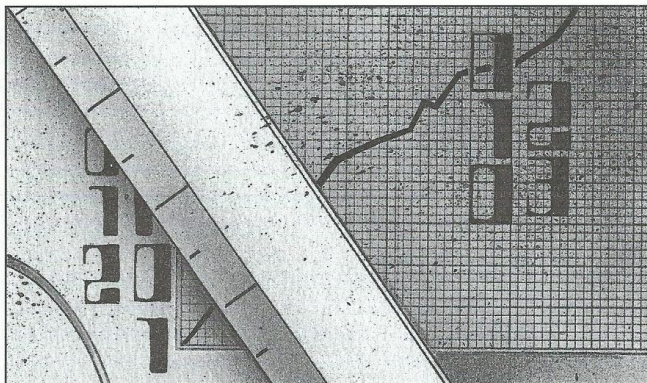
There are no shortage of good reasons why environmentalists have chosen to opt out. One is tactical. An NRDC analyst explains that once one agrees to play the game, then the demands become overwhelming—with a need for neurotoxicological expertise, reproductive toxicological expertise, carcino-

genic expertise, etc., and insatiable demand for participation in long-winded committee meetings. Most groups can't imagine wielding that sort of professional fire power. As one leader of a PIRG opined: "If we end up talking risk, we can't compete."

Another reason goes back to the ethical dimensions of the issue. Mary O'Brien, a biologist from Oregon, has over the years emerged as one of the most passionate and thoughtful opponents of risk assessment. In her view, the very undertaking of health risk assessments, much less helping to craft procedures for their continued production, lends credibility to a process she perceives as morally reprehensible. Such orthodoxy is shared by leading environmental thinkers like Barry Commoner who, in retrospect, would not repeat his own efforts in risk analysis, despite their remarkable effectiveness. In Commoner's opinion, quantifying risk belongs to the past, and full energies should be directed toward pollution prevention — today's cutting edge.

This view is not shared by the majority of environmental groups, but most agree that there is a serious danger of getting sucked in. Rather than focusing debate on pollution prevention and alternative assessments, environmentalists get trapped into playing the game by industry's rules and wasting time on nit-picking analysis over defining risk, rather than addressing the more significant issue of eliminating it.

Yet, there is little to indicate that risk assessment is going away. Some commentators, such as ELI's Paul Locke, argue that this is in part due to the fact that environmentalists have never articulated a process that might replace risk assessment. But even if the environmental movement had focused its energies on proposing an alternative process to aid decision makers in the arena of chemical regulation, when little data are available, it is unlikely that it would have supplanted QRA. As mentioned, risk assessment has considerable statutory blessing and the support of



Supreme Court decisions such as *Industrial Union, AFL-CIO v. American Petroleum Institute*. With all its imperfections, when environmental health is discussed, QRA has become the lingua franca.

How then might environmentalists get back in the game and make an environmentally justifiable contribution? There is no shortage of ideas floating around. Many involve better defining the context in which risk assessment is utilized. Too frequently, risk numbers, with all their inherent deficiencies and limitations, capture a standard setting or permitting process. There is a solid consensus among environmentalists that risk assessment should only be one of many tools, and part of an integrated process. As EDF attorney Karen Florini explains, risk assessment is ultimately no more than a way of organizing information. Environmentalists can change the way risk-based information is used. Indeed, many key environmental complaints are more precisely associated with risk management than assessment — ironically, concerns that are often shared by industry.

A more appropriate context in which to address risk should include the broader evaluation of the alternatives to a given pollution source. Friends of the Earth President Brent Blackwelder sees the present approach as essentially "backwards." Rather than starting with questions about the validity of the polluting activity and the availability of alternatives, risk assessment assumes that the activity will continue and that society's goal is to define acceptable risk. A broadened risk

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management stage could be done up front, using first-cut estimates, much like the scoping process that opens environmental impact assessments.

Environmentalists correctly fear that by immersing themselves in the minutiae of a debate over the particulars of a risk assessment supporting a given standard they will lose the forest for the trees and forget that their role isn't to quantify risk but to eliminate it. Yet, it should be noted that responsible alternative assessment itself will at some point get bogged down in explicit or implicit risk evaluation. For example, some environmentalists advocate reduction of the "ecological" risks to bird population posed by pesticides in pellet forms, like carbon furidan, by requiring its application through chemigation. Yet the risks associated with ground water contamination need to be considered before such a shift is prescribed.

In an increasingly complex world, consideration of "risk-risk" tradeoffs is not just a ploy by polluters to stymie reform. A growing literature documents a number of purportedly environmentally correct policy changes whose actual implications are anything but self-evident. This includes such diverse issues as electric cars, chlorination of drinking water, and removal of asbestos from buildings.

Mary O'Brien's forthcoming book delineating her vision of alternative assessment is intended to offer a substitute for the risk assessment/risk management process altogether. Even if such a model were not initially adopted, in the great tradition of gradual improvements that has emerged under NEPA's environmental impact assessment, more modest, concrete proposals could begin the process of incremental change.

It is certainly not clear that all environmental problems need to be considered using the same form or timing of QRA. For example, Warren Muir, president of the public interest Hampshire Research Institute, suggests that in the area of ongoing industrial activity, (i.e., permitting decisions, etc.) current risk assessment might be deemed unacceptable and could be replaced with a pollution prevention paradigm. In contrast, in the area of standard setting and remediation ("how clean is clean?") it is probably inescapable.

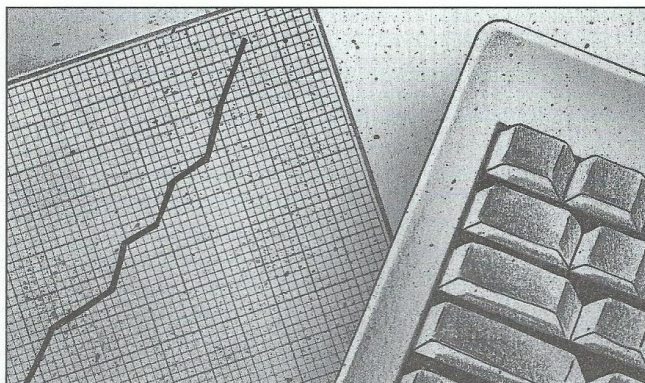
The relevant data for risk assessments must be more clearly defined and when they are unavailable (as is often the case) need to

be generated. Recently, the Legal Environmental Assistance Foundation, a Florida public interest group, successfully convinced the state Risk Based Priority Council to require specific types of information that are often unavailable prior to commencement of a formal analysis. B. Suzi Ruhl, an attorney and epidemiologist who is LEAF's president, argues that she is not yet ready to "throw in the towel" on opposing risk assessment. In the interim, however, by requiring study of relevant health information, the process can generate some numbers that have some meaning and serve to protect the public. Indeed, ELI President J. William Futrell has argued that risk assessment should be seen as a freedom of information opportunity, where environmentalists can force important information onto the table to ensure its systematic presentation to affected citizens.

EDF scientist and risk assessment expert Bill Pease argues convincingly that risk assessment can only be construed as immoral if it excludes the impacted parties from participating fully in the assessment. "Who's asking the questions and who are the potential winners and losers?" is a common and valid environmental justice theme. Most environmentalists welcome the expanded "participation" recommended in two major reports that were released in June 1996: *Understanding Risk: Informing Decisions in a Democratic society*, by the National Academy of Science, and *Risk Assessment and Risk Management in Regulatory Decision-Making*, a draft report of the Commission on Risk Assessment and Risk Management mandated under the Clean Air amendments. While the ultimate impact of these reports remains to be seen, they do specifically address many of the risk management issues that the environmental movement has raised for decades.

The commission's report offers a concise and well-supported series of recommendations about a broad range of risk-related topics, some of which reflect basic positions held by environmentalists. For example, citing testimony of Sierra Club chair Michael McCloskey, the report calls for toxicity testing of "complex environmental mixtures of regulatory importance." The commission also openly agrees with Mark Van Putten, president of the National Wildlife Federation, who argues that environmental justice considerations require risk distributions rather than point estimates, enabling populations with disproportionate exposures to be more explicitly identified.

But it is in the area of public participation that both reports are most compelling, with the NAS report advocating "extensive participation or representation of the spectrum of interested and affected parties." The commission proposes a six-stage risk management framework that "explicitly embraces collaborative involvement of stake holders . . . especially at the initial stage of formulating the problem" as well as increased identification of multimedia problems. Presumably, in such a process, communities that sensed inordinate levels of asthma or miscarriages would not wake up to find decisions made on the basis of hypothetical cancer deaths just because that's what EPA is most familiar with quantifying.



There are signs that many environmental organizations are taking a more pragmatic approach to risk assessment

No area has already attempted to involve the public more than comparative risk assessment. Documented and extolled in Resources for the Future's recent book *Comparing Risks: Tools for Setting Government Priorities*, the process used by several states and Native American tribes across America bring together a representative "ranking committee" that identifies and then prioritizes problems. EPA's guidebook on the subject includes a much broader set of ecological and human health criteria than conventional cancer-based assessments, with issues like irreversibility receiving substantial weight. It is not surprising, then, that when surveyed, a majority of environmentalists felt that there is more merit in comparative risk assessment as a priority setting tool than conventional QRA for standard setting. For instance, Tom Goldtooth, director of the Indigenous Environmental Network, explains that despite the undeniable tension with Native American philosophy, the process helped tribes make better management decisions.

Yet, here too, context remains essential. McCloskey offers an interesting insight re-

garding EPA's most ambitious exercise in comparative risk in its 1987 report *Unfinished Business*, where 31 different national environmental problems were ranked according to four health and non-health criteria. McCloskey notes that the results had the net effect of suggesting a shift of resources, and in a sense, public opprobrium for polluters to such relatively banal factors as geological formations and worker awareness. Identifying indoor radon concentrations or farm laborers' exposures to pesticides as the most severe health hazards almost seemed to exonerate polluters who are still responsible for causing substantial disease and ecological damage.

When hard choices must be made under conditions of limited resources — as they always are — systematic comparative analysis is sensible. Indeed, several environmental organizations have initiated internal processes that contain quasi risk analytic components as part of their own strategic planning process. In this context, EDF's Florini emphasizes that finding risk reduction opportunities is ultimately more important than identifying high risks per se. Comparative risk analysis becomes problematic to environmentalists when risk numbers control the entire decision making process. Additional criteria such as preventability of a hazard, the voluntariness of risk, public perceptions and fears, the social value and merits of a polluting activity, and even aesthetics must be part of the equation.

As part of the Clean Air Act, toxic air emissions are subject to best available technology standards. Yet, the act goes further imposing a 10^{-6} "residual risk" standard on this class of pollutants. In other words, if after the adopting controls, resulting concentrations in-

crease the exposed populations' risk of getting cancer by even a probability of one in a million, then additional emission reductions are required. The provisions, constituting the first time that an actual numerical risk level appears in a federal statute, were to a large part brokered by NRDC attorney David Donniger.

In justifying the move, NRDC senior scientist Linda Greer explains that the ultimate objective was to impose technology-based standards to reduce toxic emissions. A residual risk standard was simply the icing, ensuring the public of even greater protection. By definition, such a standard can only cut in the direction of reduced exposures. In a sense, residual risk standards can be seen as roughly analogous to alternative analysis: First, reduce pollution to the best of the collective technical capacity. If it appears that even a relatively minuscule level of risk remains, do better.

Another possibility, offered by EDF's Silbergeld, runs the process in the opposite order. Accordingly, a preliminary finding of risk (hazard identification) triggers either application of best available control technology or, in other instances, an outright ban. Under both this approach and that of residual risk, debate over risk quantification doesn't get in the way of tangible measures to reduce pollution.

There are signs that many environmental organizations are taking a more pragmatic approach to risk assessment. While these national and grass-roots groups have in no way lost sight of its limitations and the way it is often misused, they can no longer ignore its value as an advocacy tool. A staff scientist for the Minnesota Clean Water Alliance believes that it will take a conventional risk assessment of local exposures to mercury in fish to trigger a firm regulatory response from the state environmental department. The science director of another organization acknowledges that QRA would help his organization decide whether it was a better use of resources to assist homeowners with a problem involving electromagnetic fields or a problem involving radon. NRDC's recent city-by-city evaluation of anticipated mortality from fine particulates presumably will provide local advocates with the data necessary to take on this pressing issue through QRA.

The benefits of participation in the risk as-

essment game, however, should by no means be exaggerated. Many argue that the American public is growing numb to the numbers. As Stephanie Pollack, senior attorney at the Conservation Law Foundation, has noted, two years after a compelling analysis from Harvard University pointed to the mass mortality associated with fine particulate air pollution, the finding appears to have done little to expedite a new ambient air quality standard, recently proposed by EPA to strong industry resistance. "We're talking about an environmental surprise that comes along once a decade. If a potential 60,000 annual deaths doesn't change regulatory business as usual, why should a local, less spectacular risk assessment make a difference?"

Moreover, the severe financial constraints that lie behind many environmental activists' aversion to risk assessment is not going to change. In the inevitable cases where local environmental groups are unable to garner the resources and experts to go toe to toe with a pro-industry risk assessment, general attacks on QRA's legitimacy may offer the most promising immediate strategy. But, over the long-run, environmentalist capabilities to participate effectively must be strengthened. This will mean, *inter alia*, a shift in personnel resources and the hiring of risk assessment professionals with strong backgrounds in public health, toxicology, epidemiology, and statistics.

The environmental loss associated with side stepping the debate entirely is considerable. Consider the dilemma recently faced in San Diego by the Environmental Health Coalition, a local public interest group. Under a state referendum passed in the late 1980s (frequently called the "Air Toxics Hot Spot Law"), polluters have to undertake inventories and subsequent risk assessments of their air emissions. A local shipyard's chromium discharges from welding activities were initially assessed as creating a 6,900 in a million additional cancer risk for surrounding populations. Alarmed at the results, the yard commissioned a follow-up version, whose results showed only a level of 8 in a million.

The coalition chose to undertake a critical evaluation of the revised study. Strategically, this linked the community's position to the risk assessment-based requirements, despite the urgings of purists that such a move legitimized QRA. Yet, tactically, it promised the greatest improvement for citizen's environmental health. These grass-roots challenges to the conventional orthodoxy that opposes

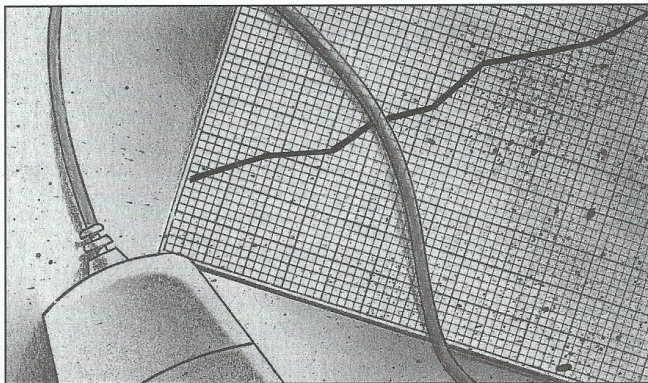
risk assessment in all forms ultimately support positions like those held by Silbergeld, who favors more and simpler risk assessments.

Silbergeld argues that typically there is insufficient thought at the outset, regarding the purpose of the risk assessment and what information is actually needed.

In many cases, an elaborate assessment is superfluous. "You don't build Versailles if what you want is a birdhouse." Citing the advantages of the margin-of-exposure approach found in several Western European countries, where a safety or uncertainty factor is applied to non-genotoxic carcinogens as well as exposures to threshold, non-carcinogenic chemicals, she says, it "avoids the need to select mechanism-based approaches to classes of toxicants based on an endpoint and an assumed mechanism of action. An advantage of this approach is that it restores priority for chemicals that might not be carcinogenic but that are highly toxic to the reproductive or nervous system." (The recent commission report also recommends that the "margin of exposure approach" be extended to carcinogens with linear dose-response characteristics).

But in its present form (and certainly that proposed in EPA's guidelines) risk analysis remains a fairly opaque and foreboding endeavor. Given the present trends, simplifying the process while developing and codifying a more environmentally protective, conservative version constitutes an important challenge. No less important is educating environmentalists and producing and distributing user friendly software for public advocacy in order to open the discipline up to local activists. This indeed has been one of the primary missions of the Hampshire Research Institute. EDF is beginning to offer "interpretive" support on the Internet. A new pragmatism towards QRA may be emerging.

Lois Gibbs, expressing the sentiments of



grass-roots activists, writes, "Environmental groups are joining together to abolish the use of risk assessments and to change the way society deals with its wastes." While this idealistic position may hold visceral appeal and be popular with grass-roots activists, in the long run it is not clear that it will enhance the influence of environmental organizations on public policy at either the local or national level.

Pollution prevention should certainly remain a paramount objective on the movement's environmental health agenda. But it is also time to reconsider the green one upmanship that seems to have characterized much of the past debate — where groups that dabble in or try to influence risk assessment are branded as sellouts. Risk assessment has been picking up steam as a practice for twenty years. Indeed the new Safe Drinking Water Act reauthorization, with a substantial risk-related section, passed the Senate last year by a vote of 99 to 0. The reality is that it may take twenty more years before an alternative process receives sufficient support to enhance or replace QRA. In the meantime, circumstances will frequently require tools that risk analysis can provide.

The environmental movement has a responsibility to be as involved in shaping risk assessment as it is in so many other arenas. To do so effectively may mean changing orientation, professional expertise, and, for the time being, compromising. A proactive public interest effort holds the potential to transform current risk assessment, making it more responsive to community concerns, an effective advocacy tool for public interest activists, and part of an overall strategy for preventing pollution. •

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