



By Carolyn Raffensperger

## Cumulative Impacts And Precaution

California is leading the nation in ensuring environmental justice by addressing the environmental degradation from cumulative effects — what William Odum called “the tyranny of small decisions.” Successfully applying a precautionary approach to these decisions will require rapid evolution of environmental decisionmaking tools beyond traditional risk assessment, with its tendency to concentrate on only those select few pollutants subject to a regulation at hand; in isolation from other sources of that pollutant, other dangerous substances, other media, and the natural ecosystem as a whole; and to ignore the totality of how people actually live in their homes and their communities.

Environmental justice officially became a matter of federal concern in 1992, when EPA established the Environmental Equity Workgroup that confirmed reports of environmental inequities ranging from disproportionate exposure to lead, air pollutants, contaminated fish, and agricultural pesticides. The agency created the Office of Environmental Justice in response. President Clinton followed by issuing Executive Order No. 12898, which charged federal agencies to address disproportionate health and environmental effects on minority and low-income populations.

Now, California is writing the next major chapter in environmental justice. Pursuant to a 2000 law, Cal EPA created an advisory committee on environmental justice that has just issued recommendations for the state agency in four areas: cumulative impacts assessment, precautionary approaches, public par-

ticipation, and community capacity building. Of these, the most novel are the cumulative impacts assessment and the precautionary approach, which of course are synergistic. Cumulative impacts assessment and precaution will be used in pilot project communities in 2005-2006. These methods will then be fine-tuned and expanded to all Cal EPA activities. The results of the pilots will also be used to develop policies to address cumulative impacts and precautionary approach issues.

The definition of cumulative impacts used by Cal EPA is “exposures or public health and environmental effects from combined emissions and discharges, in a geographic area including environmental pollution from all sources, whether single or multimedia, routinely, accidentally, or otherwise released. Impacts take into account sensitive populations and socioeconomic factors, when data is available.”

There have been earlier definitions of cumulative effects assessment — it’s been a crucial part of NEPA for decades — but it is only now being used to rectify environmental injustice. The issue is how to ensure a solid base for analysis and to turn that analysis into effective policy. In 1997 the Council on Environmental Quality issued a report entitled “Considering Cumulative Effects under the National Environmental Policy Act.” The authors proposed eight principles of cumulative effects that merit review today in the context of California’s pilot and, hopefully, for national policies:

- Cumulative effects are caused by the aggregate of past, present, and reasonably foreseeable future actions;
- Cumulative effects are the total effect, including both direct and indirect, on a given resource, ecosystem, or human community of all actions taken, no matter who (federal, nonfederal, or private) took them. The additional effects contributed by actions unrelated to the proposed action must be included in the analysis;
- Cumulative effects may result from the accumulation of similar effects and from the synergistic interaction of different effects;
- Cumulative effects need to be analyzed in terms of the specific resource, ecosystem, or human community, not

from the perspective of the proposed action;

- Cumulative effects analysis on natural systems must use natural ecological boundaries and analysis of human communities must use actual socio-cultural boundaries to ensure including all effects;

- Cumulative effects analysis needs to apply the best science and forecasting techniques to assess potential catastrophic consequences in the future;

- For cumulative effects analysis to help the decisionmaker and inform interested parties, it must be limited through scoping to effects that can be evaluated meaningfully. The boundaries for evaluating cumulative effects should be expanded to the point at which the resource is no longer affected significantly or the effects are no longer of interest to affected parties; and

- Each affected resource, ecosystem, and human community must be analyzed in terms of its capacity to accommodate additional effects, based on its own time and space parameters. The most effective cumulative effects analysis focuses on what is needed to ensure long-term productivity or sustainability of the resource.

In applying a precautionary approach to these principles and evolving beyond risk assessment, new strategies will emerge that will likely include modified analytical methods and adaptive management strategies. Developing an entire suite of analytical tools that are scientifically accurate, protective of public health, and transparent is a scientific frontier worthy of the next generation.

Finally, simplistic notions of economic efficiency must give way to more nuanced evaluations based on equity: we cannot preserve carbon credits, air and water quality, fish habitat on the backs of the poor. This is what the precautionary principle really stands for — new science and a new bioethic. If we can rapidly evolve in both our science and ethics, we stand a chance of achieving environmental justice. Kudos to California for leading the way with its innovative decision to apply the precautionary approach to cumulative effects.

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