

# Human Rights against Polluters: More than Protecting “Susceptible” Populations

**Kristin Shrader-Frechette**, University of Notre Dame

**Annrose Jerry**, University of Notre Dame

“Accountability for reasonableness” (AFR) procedures for public decisionmaking require that decisions be legally enforceable, revisable given new evidence, made in public forums, justified through publicly available evidence, and for reasons that fair-minded people consider relevant (Daniels and Sabin 1997, 2002). The contribution by Resnick, MacDougall, and Smith (2018) extends AFR to decisionmaking about environmental-health risks, especially environmental-justice (EJ) threats. They do a good job of showing how prominent theories of justice can justify preventing such harm. Because they recognize that real-world power and economic dynamics threaten decisionmaking fairness, especially toward “minorities or people of low socioeconomic status,” they also deserve credit for extending AFR to include steps such as town-hall meetings, focus groups, surveys, and soliciting “the views of groups who may not be effectively represented” (Resnik et al 2018, 17).

While the AFR improvements of Resnik et al (2018) are praiseworthy and necessary, are they enough to balance the disproportionate power dynamics in most EJ decisionmaking? Probably not. Consider a typical case, that of child EJ victims of organophosphate pesticides like chlorpyrifos. Dow Chemical introduced chlorpyrifos in 1965. It quickly became one of the most-used US pesticides, with US sales of 8–21 million pounds each year (Grube et al 2011), and a major contributor to Dow’s annual revenues of \$48 billion. Because organophosphates like chlorpyrifos are neurotoxins derived from nerve gases developed by Nazi Germany for use in its death camps, chlorpyrifos is extremely toxic, causing more than 10,000 accidental-poisoning deaths every year (Rathood & Garg 2017). Chlorpyrifos also is a key reason that 500,000 of the 4 million US children born annually faces neurodevelopmental disorders such as autism, IQ losses, tremors, and attention-deficit-hyperactivity disorder (eg, Grandjean & Landrigan 2014, Shelton et al 2014).

In 2011 three different teams of prominent researchers from Berkeley, Columbia, and Mt. Sinai Medical School each independently published robust results confirming scientific consensus on organophosphate-

including-chlorpyrifos harm. They confirmed that even the lowest organophosphate doses cause serious, in-utero, neurodevelopmental damage. (Bouchard et al 2011, Engel et al 2011, Rauh et al 2011). Beginning in 1997, the universities’ carefully-controlled, geographically-diverse, 1000-subject, in-utero case cohorts confirmed, for instance, that each 10-fold increase in a pregnant woman’s organophosphate levels is associated with her child’s losing an additional 6 IQ points by age 7 (Bouchard et al 2011). Together, these classic publications jointly won the 2012 “Paper of the Year” award from the top journal of the US National Institute of Environmental Health Sciences. Largely as a result, in 2015 President Obama began a chlorpyrifos ban. However, Dow Chemical (2016) says chlorpyrifos has “wide margins of protection for human health and safety,” spends \$16 million/year to lobby for chlorpyrifos and its other chemicals, and claims the Berkeley-Columbia-Mt.-Sinai science is “not reliable” (eg, Burns et al 2013). Dow also donated \$ 1 million to pay for President Trump’s inauguration. In 2017, the Trump administration reversed the Obama chlorpyrifos ban. One possible explanation for the reversal is financial conflicts of interest. Although the different groups of university scientists who independently confirmed organophosphate/ chlorpyrifos harm have no conflicts of interest, Dow employees (eg, Burns et al 2013) wrote or funded all major, post-2011 studies that criticize the Berkeley-Columbia-Mt-Sinai findings, studies that have serious methodological flaws (Shrader-Frechette & ChoGlueck 2017).

What does the Dow chlorpyrifos case show about the adequacy of AFR for EJ decisionmaking?

First, it suggests that current AFR procedures may not stop typical EJ abuses like Dow’s special-interest-science” (SIS), research funded or done by those with financial conflicts of interest in order to achieve their predetermined, profit-oriented goals (Shrader-Frechette 2014). The American Association for the Advancement of Science warns that industry funds 75 percent of US science and that, for every \$100 that corporations spend on environmental-health research, government and universities spend about

---

Address correspondence to Kristin Shrader-Frechette, Department of Biological Sciences, Department of Philosophy, and Director, Center for Environmental Justice and Children’s Health, University of Notre Dame, 100 Malloy Hall, Notre Dame, IN 46556, USA. E-mail: kshrader@nd.edu

Copyright © Kristin Shrader-Frechette and Annrose Jerry

\$1. Unsurprisingly industry-funded studies rarely attribute harmful effects to their products and pollutants, though independent researchers often do so (Michaels 2008). One result is that most environmental-health-risk conflicts also are controversies over science, not just ethics or policy. Yet classic US National Academies of Sciences studies confirm that because potential EJ victims often cannot participate meaningfully and scientifically in risk decisions affecting them, government should “provide resources” to them to “identify or hire their own [scientific] experts” to help inform and educate them (NRC 1996, 135). AFR should be improved to require both exposing any decision-relevant SIS and providing full scientific-resource funding to potential EJ victims (Shrader-Frechette 2007).

*Second*, the chlorpyrifos case also suggests that AFR procedures should follow the academy recommendation to ensure that potential EJ victims have “broad participation... early” in the [environmental-health-decision] process...especially in problem formulation” (NRC 1996, 4). Because large corporate polluters typically enjoy extensive budgets, close government contacts, in-house attorneys, and effective government lobbying, they have early warnings of possible government regulations that could diminish their profits. However, potential EJ victims have no comparable early warnings of pollutants that could diminish their health. Corporations also take tax write-offs for SIS, lobbying, and attending public meetings, but EJ victims typically receive no such benefits. Instead they often must miss work, lose wages, pay a babysitter, or otherwise sacrifice to be part of EJ decisionmaking. Because victims “cannot afford the time...travel, or...technical assistance they need to participate meaningfully in... [democratic] deliberations” [DD] about environmental-health risks, it’s “necessary to provide [them with]...resources,” such as “travel money,” to “educate all the participants,” and to pay vulnerable citizens “for their time” (NRC 1996, pp. 4, 90,160–161). Unless government corrects the temporal or early-warning and financial disparities that contribute to unequal opportunities for representation in decisionmaking, the academy study warned that environmental-health decisions will focus “on only a few adverse outcomes...judged to be the most serious;...may narrow the list of outcomes... because of political pressures”; and will likely be “biased and inadequate” (NRC 1996, 42–43) AFR thus should ensure that potential EJ victims have equal opportunities for the earliest warnings about environmental-health threats, for engaging in the earliest problem formulation, and for funding of their time, work, and scientific experts.

*Third*, cases like chlorpyrifos suggest that Resnick and coauthors should be wary of speaking of EJ victims, like children or minorities, as “susceptible subpopulations.” EJ victims are hardly “susceptible subpopulations” when everyone exposed—not just subpopulations—is at greater risk because of pollutants that are carcinogens, endocrine disruptors, or pesticidal neurotoxins. Nor are poor or minority EJ victims best described as “susceptible subpopulations” when the American Public Health Association (APHA 2015, 27) warns that polluters “routinely” and deliberately target them “to host facilities that have negative environmental

impacts.” Using language like “susceptible subpopulations” inadvertently plays into the hands of economically powerful polluters and their SIS. For instance, current tobacco-industry SIS claims that although cigarettes are not inherently harmful, a “minority” of smokers has “genetic variations... susceptibility to [harm such as] nicotine addiction or lung cancer,” while the majority of people, the “nonsusceptible population” can “smoke with a clear conscience,” knowing that smoking will cause no serious harm (Capps & Van Der Eijk 2014, 1835). Yet like fossil-fuel combustion, all tobacco smoke releases particulate matter (PM). PM has no safe dose and causes brain, lung, and other cancers (Shrader-Frechette 2011, 8). When Resnik et al use such susceptibility language, they not only blur the distinction between extrinsic causes of harm (eg, unjust pollution levels) and intrinsic causes (eg, individual biological vulnerability), but they join a long list of polluters whose game plan is to deny responsibility for their harm and to “blame the victims” for their “susceptibility” (Shrader-Frechette 2011, 116–126), Resnik et al and AFR practitioners should call EJ victims what they are, not “susceptible subpopulations.”

*Fourth*, to their credit, Resnick et al (18) demand rejecting environmental-health “decisions that violate constitutionally-protected fundamental rights,” but arguably they could go further. They could require that AFR decision-making endorse—as the APHA does—a new constitutional amendment that guarantees all Americans’ human rights not to be seriously harmed by pollution. AFR can hardly promote meaningful citizen participation in DD if participants cannot breathe clean air and drink clean water—that is, fulfill their rights to life and to equal protection (Shrader-Frechette 2007, 119, 10–149).

Although AFR endorses many necessary conditions that promote fairness in environmental-health decision-making, it could be even better. AFR could incorporate prominent US National Academy and APHA recommendations, and it could employ a more robust notion of DD or “public deliberation” (Resnik et al 17), one in which “risk experts, public officials, and...affected parties...interact as equally valid contributors” (NRC 1996, 159). EJ victims deserve not merely AFR-defined “representation,” but equal-opportunity status as contributors to environmental-health decisionmaking. ■

## REFERENCES

- American Public Health Association (APHA). 2015. *Better health through equity: case studies in reframing public-health work*. Washington, DC: APHA.
- Bouchard, M., J. Chevrier, K. Harley, K. Kogut et al. 2011. Prenatal exposure to organophosphate pesticides and IQ in 7-year-old children. *Environmental Health Perspectives* 119 (8):1189–1195. <https://doi.org/10.1289/ehp.1003185>.
- Burns, C., L. McIntosh, P. Mink, A. Jurek and A. Li, Pesticide exposure and neurodevelopmental outcomes. 2013. *Journal of Toxicology and Environmental Health* 16 (3–4):127–283. <https://doi.org/10.1080/10937404.2013.783383>.

- Capps, B. and Y. Van Der Eijk. 2014. The tobacco industry, researchers, and ethical access to UK Biobank. *American Journal of Public Health* 104 (10):1833–39. <https://doi.org/10.2105/AJPH.2014.302138>.
- Daniels, N. and J.E. Sabin. 1997. Limits to health care. *Philosophy and Public Affairs* 26 (4):303–50. <https://doi.org/10.1111/j.1088-4963.1997.tb00082.x>.
- Daniels, N. and J. E. Sabin. 2002. *Setting limits fairly*. New York: Oxford University Press.
- Dow. 2016. Dow AgroSciences, US farmers disagree with US EPA proposal to revoke chlorpyrifos tolerances. Accessed 12-10-17 at <https://www.dowagro.com/en-us/newsroom/pressreleases/2016/11/dow-agrosciences-us-farmers-disagree-with-us-epa-proposal-to-revoke-chlorpyrifos-tolerances#.Wi1WoFWnEqd>
- Engel, S., J. Wetmur, J. Chen, et al. 2011. Prenatal exposure to organophosphates, paraoxonase 1, and cognitive development in childhood. *Environmental Health Perspectives* 119 (8):1182–88. <https://doi.org/10.1289/ehp.1003183>.
- Grandjean, P. and P. Landrigan. 2014. Neurobehavioural effects of developmental toxicity. *The Lancet Neurology* 13 (March):330–336. [https://doi.org/10.1016/S1474-4422\(13\)70278-3](https://doi.org/10.1016/S1474-4422(13)70278-3).
- Grube, A., D. Donaldson, T. Kiely, and L. Wu. 2011. *Pesticide industry sales and usage report*. Washington, DC: US EPA.
- Michaels, D. 2008. *Doubt is their product: How industry's assault on science threatens your health*. New York: Oxford University Press.
- National Research Council (NRC). 1996. *Understanding risk*. Washington, DC: National Academy Press.
- Rathod, A.L. and R.K. Garg. 2017. Chlorpyrifos poisoning and its implications in human fatal cases. *Journal of forensic and legal medicine*. 47 (April):29–34. <https://doi.org/10.1016/j.jflm.2017.02.003>.
- Rauh, V., S. Arunajadai, M. Horton, et al. 2011. Seven-year neurodevelopmental scores and prenatal exposure to chlorpyrifos. *Environmental Health Perspectives* 119:1196–1201. <https://doi.org/10.1289/ehp.1003160>.
- Resnick, D., D. R. MacDougall, and E. M. Smith. 2018. Ethical dilemmas in protecting susceptible subpopulations from environmental health risks: Liberty, utility, fairness, and accountability for reasonableness. *American Journal of Bioethics* 18 (3):29–41.
- Shelton J. F., E. M. Geraghty, D. J. Tancredi, et al. 2014. Neurodevelopmental disorders and prenatal residential proximity to agricultural pesticides: the CHARGE study. *Environmental Health Perspectives* 122 (10):1103–1109.
- Shrader-Frechette K. and C. ChoGlueck. 2017. Pesticides, neurodevelopmental disagreement, and Bradford Hill's guidelines. *Accountability in Research* 24 (1):30–42. <https://doi.org/10.1080/08989621.2016.1203786>.
- Shrader-Frechette, K. 2014. *Tainted: How philosophy of science can expose bad science*. New York: Oxford University Press.
- Shrader-Frechette, K. 2011. *What will work: fighting climate change with renewable energy, not nuclear power*. New York: Oxford University Press.
- Shrader-Frechette, K. 2007. *Taking action, saving lives*. New York: Oxford University Press.

# Rights, Reasonableness, and Environmental Harms

Matt Zwolinski, University of San Diego

Resnik and colleagues argue that (1) influential theories of justice like utilitarianism and libertarianism fail to provide specific guidance on issues pertaining to the distribution of environmental health risks, and that (2) the theory of Accountability for Reasonableness (AFR) can serve as useful complement to these theories by providing a procedural framework for deliberation. I am mostly sympathetic with the first of these claims, and somewhat more skeptical about the second. I will start by explaining my reasons for skepticism, and then say a bit about the first claim, with a focus on the theory of justice with which I am most familiar through my own work, libertarianism.

My skepticism about AFR stems in part from a lack of clarity regarding whether it is meant to serve as a

supplement to traditional theories of justice (as the authors state on page 4), or to substitute for them (as the authors seem to suggest on pp. 17–18). I certainly don't think that it can do the latter. The procedures we use to make decisions about public policy matter. But they aren't the only thing that matters. A perfectly followed procedure can still yield a decision that violates the basic rights of certain individuals or groups. This is why, as the authors note (18), constitutional democracies impose constraints on the outcomes of democratic processes, ruling out democratically passed laws that, say, illegitimately restrict individuals' freedom of expression. We want decisions to be substantively just, not merely procedurally just.

But simply noting that constitutional democracies will impose constraints on the decisions reached is not

---

Address correspondence to Matt Zwolinski, Department of Philosophy, University of San Diego, 5998 Alcalá Park, San Diego, CA, 92110, USA. E-mail: [mzwolinski@sandiego.edu](mailto:mzwolinski@sandiego.edu)