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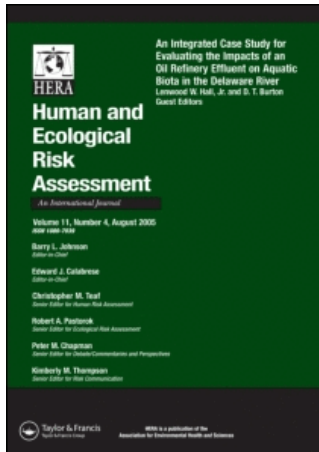
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### In Defense of Risk Assessment: A Reply to the Environmental Justice Movement's Critique

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## **In Defense of Risk Assessment: A Reply to the Environmental Justice Movement's Critique\***

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### **ABSTRACT**

The environmental justice movement believes risk assessment is undemocratic. The movement believes risk assessment is a way of trading human health for profit and a means of legitimizing exposure to toxic chemicals. The movement considers risk assessment an evil industry and a tool developed by those who wish to oppress racial and ethnic minorities. These beliefs are wrong and the environmental justice movement is a Luddite enterprise. Risk assessment is a fundamentally democratic process and enables all people, regardless of race, ethnicity, income or social status, to enjoy the benefits of technology and also suffer its drawbacks within a framework of equality and democracy.

*"A savage servility slides by on grease."*

- Robert Penn Warren  
For the Union Dead

One of the cornerstones of the Environmental Justice Movement is the belief that the brunt of the toxic legacy of industrialized western civilization is unfairly borne by socioeconomically disadvantaged groups, particularly people of color. The movement contends that all people, regardless of race or income, have the right to live in an unsullied and pristine landscape without even having to consider exposure to hazardous or toxic substances. The movement has also demanded the cessation of the production of all toxins, hazardous wastes, and radioactive materials (POCELS, 1991).

Others, outside the Environmental Justice Movement, take the opposite view and believe that environmental racism is a myth and that economic circumstances alone determine one's living conditions. These opponents of environmental justice do not believe that freedom from exposure to chemicals is a basic human right. Instead, the

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\* This work was performed by the author in his private capacity and does not reflect the policies and views of the Environmental Protection Agency or any other agency of the Federal Government.

opponents contend that only the exercise of the right to improve one's circumstances — what our founding fathers termed “the pursuit of happiness” — should afford one freedom from environmental pollution.

Technology and industrialization have provided many advantages for Americans at the dawn of the twenty-first century. Technology is a double-edged sword — it affords us the benefits of modern life, including medical advances, microwave ovens and mass transit. But technology and industrialization have a downside, a legacy of toxic waste, and America cannot enjoy technology's benefits without dealing with the associated hazards.

Risk assessment is the means by which our society controls the unintended consequences of technology within the framework of democracy. As such, risk assessment is vital to the future of the United States. Although risk assessment depends on many of the features of modern technology, risk assessment is philosophically quite different from technology. Technology begs the question: “Is this new wrinkle a benefit or merely a feature?” Risk assessment answers this question.

Risk assessment is a decision tool. Risk assessment does not specify decision criteria, and a risk assessment is not a decision. Rather, risk assessment provides useful information to the decision-makers.

The Environmental Justice Movement believes risk assessment is fundamentally undemocratic. The movement states that risk assessment provides a way to trade human health for profit and to legitimize human exposure to harmful substances. The movement also claims that today's efforts in environmental protection ignore the increased risk of racial and ethnic minorities to toxic chemicals and has created a risk assessment industry (Bullard, 1994; Israel, 1995; Sexton, 1997).

The movement is wrong. Risk assessment is the most appropriate tool for decision-making in the face of uncertainty within the framework of a democratic society.

### **IS RISK ASSESSMENT A WAY OF TRADING HUMAN HEALTH FOR PROFIT?**

Underlying this claim is the unstated notion that people living in modern America can live in pristine conditions. This notion is a pipe dream. Technological advances are market-driven and do lead to profit. However, the idea that human health is traded for profit, presumably in some sort of cost-benefit framework, is absurd. Risk assessment, as practiced in America, ensures that human health is not equated with company profits. Risk assessment is used to develop cleanup and maintenance strategies that are based on protection of human health and the environment without considering cost. In fact, cost-benefit considerations are explicitly excluded from risk assessment. Several European countries have assigned a monetary value to human life for use in weighing risks and benefits. Fortunately, the United States has refrained from choosing such a value.

### **IS EXPOSURE TO HARMFUL CHEMICALS LEGITIMATE?**

Exposure to pollution is a fact of modern life for all Americans. Just ask any runner in Atlanta, Phoenix or Los Angeles whether air pollution is a summertime health threat.

Congress has chosen a regulatory level, a “brightline” of risk for regulating exposure to hazardous substances. This brightline is the familiar criterion of a one-in-a-million lifetime risk of cancer. The Environmental Justice Movement claims that any exposure to hazardous chemicals, however miniscule, is illegitimate. This objection is to the decision criteria adopted by Congress and not toward risk assessment. If the Environmental Justice movement believes that a one-in-a-million lifetime risk of cancer is too great, recourse is available in the voting booth.

Life and risk are inseparable. The viewpoint of the movement regarding the one-in-a-million decision criterion is naïve. To put the regulatory brightline of one-in-a-million risk of cancer in perspective, the probability of contracting cancer during the lifetime of every American is between one in three and one in four. No doubt Congress chose the regulatory level of one-in-a-million to ensure that any risks Americans experienced from inadvertent exposure to hazardous chemicals would be vanishingly small.

Risk assessment permits us to understand the low levels of chemicals that could give rise to these vanishingly small risks and, more importantly, provides a regulatory decision tool. If any exposure to chemicals is deemed illegitimate, our society could no longer enjoy the benefits of technology.

The use of any decision criterion indeed suggests that contact with low levels of hazardous chemicals is acceptable and thus legitimizes exposure. However, because of the tiny one-in-a-million regulatory threshold, this is a distinction without a difference!

#### **ARE MINORITIES MORE SUSCEPTIBLE TO TOXIC EFFECTS?**

Low-income people and people of color may indeed be more exposed to toxic chemicals occurring at hazardous waste sites than are the majority of Americans. Because of this possibility of increased exposure, the Environmental Justice Movement has correctly and courageously highlighted the need for adequate protection from pollution for all Americans, regardless of age, culture, ethnicity, gender, race or socioeconomic status (Bullard, 1994; Sexton, 1997).

However, the Environmental Justice Movement makes a further claim — that poor people and people of color are more susceptible to the toxic effects of chemicals (Freeman, 1991; Grassman, 1996). Not only is this claim spurious, but the data the movement use to support this contention are not relevant to the issue.

Certainly, many people among racial and ethnic minorities lack access to adequate health care, use tobacco products, drink alcohol, eat a substandard diet and generally live less healthful lives than most Americans (Graham, Chang & Evans, 1992). The same groups also have higher rates of morbidity and mortality than the general population (Novarro, 1990; Pappas *et al.*, 1993).

The Environmental Justice Movement tries to equate poor general health and maladaptive life style choices with greater vulnerability to toxic chemicals — a fallacy. What the movement fails to consider is that the toxicity assessment already takes into account the increased sensitivity of certain groups or individuals to the toxic effects of chemicals.

A reference dose or RfD is defined as an estimate, with uncertainty spanning perhaps an order of magnitude or greater, of a daily exposure level for the human

population, including sensitive subpopulations, that is likely to be without an appreciable risk of deleterious effects during a lifetime (USEPA, 1989). This definition clearly includes those groups considered more susceptible than the "average human." RfDs are derived by obtaining a dose level from an animal study that is without harmful effects. This dose level is then divided by several uncertainty factors (UFs) to arrive at a daily dose considered acceptable for all humans. One of these uncertainty factors specifically accounts for human variability and encompasses sensitive subpopulations (Barnes and Dourson, 1988). An uncertainty factor of 10 for human variability has been shown to be protective for all humans for 85% of commonly encountered chemicals at Superfund sites (Dourson, Felter & Robinson, 1996). An uncertainty factor of 10 for human variability would protect 100% of the members of a population of widely varying physiological characteristics when exposed to a single chemical (Simon, 1997).

A cancer slope factor (CSF) is a measure of the linear relationship between dose and risk. Instead of using the actual slope of the dose response curve from laboratory or epidemiological studies, the 95 percent upper confidence bound on the slope is used for regulatory decision making. This use of an upper bound in this way accounts for any individual who may be more susceptible to the carcinogenic effects of chemicals. EPA's proposed cancer guidelines advocate an approach in which susceptible subpopulations are identified based on scientific criteria and cancer slope factors adjusted accordingly (USEPA, 1996). The clearest example of such an identification occurred in the recent EPA assessment of the health risks of trichloroethylene. Diabetics were identified as a sensitive subgroups for trichloroethylene-induced liver cancer and this increased susceptibility was taken into account (Pastino, Yap, and Carroquino, 2000).

Although sensitive subgroups do exist, the claim of increased susceptibility to toxic effects among racial and ethnic minorities is a myth perpetuated by those espousing the Environmental Justice agenda. This claim has not a single iota of scientific support. If the Environmental Justice Movement seriously believes that poor people and people of color are more susceptible to the toxic effects of chemicals, then evidence supporting this claim should be put forward. The extant epidemiological studies should be examined to determine if racial and ethnic minorities are more susceptible than the general population. To date, a serious effort has not been made.

#### **IS RISK ASSESSMENT AN "EVIL" INDUSTRY?**

Prior to 1994, the Environmental Justice Movement was one of many grassroots organizations weighing in on environmental issues. These organizations included the Sierra Club, the Kentucky Environmental Foundation, Friends of the Earth, and the Natural Resources Defense Council. A survey of a number of environmental groups revealed almost unanimous disdain, distrust and skepticism about risk assessment (Tal, 1997). In this regard, the Environmental Justice Movement has jumped on the same bandwagon as these other environmental groups. Most environmental groups including those in the Environmental Justice Movement view risk assessment as undemocratic. This unfortunate impression was created by the early practices of risk management in which community stakeholders were excluded from the decision process.

In February 1994, President Clinton issued Executive Order 12898 on Environmental Justice to focus attention on the environmental conditions in minority and low income communities. Environmental Justice groups have petitioned under Title VI of the 1964 Civil Rights Act with some success.

Recently, Shintech, a maker of polyvinyl chloride used in athletic shoes, abandoned plans to build a chemical plant in Convent, Louisiana following a petition by a coalition of Environmental Justice and other activist groups. The petition claimed that the siting of the Shintech chlor-alkali plant in Convent would create a disproportionate toxic burden for the predominantly African-American residents of the community (Tulane Environmental Law Clinic, 1997). Shintech pulled out before EPA could rule on the petition. EPA was considering the claim of disproportionate impact using two risk assessment techniques — Relative Burden Analysis (RBA) and the Cumulative Outdoor Air Toxics Exposure Methodology (COATEM) (USEPA, 1998). It is likely that Shintech knew that the risk assessment would reveal a disproportionate toxic impact to the residents of Convent and decided the fight could not be won.

Despite the Environmental Justice peroration that risk assessment has become an industry or “evil empire,” the Shintech case clearly shows the democratic aspects of risk assessment. The Shintech matter is considered a major coup for the movement and clearly demonstrates that risk assessment cuts both ways.

#### **DISTRUST OF RISK ASSESSMENT IS DISTRUST OF TECHNOLOGY**

Risk assessment is a decision tool, nothing more. It provides stakeholders a way to divide and conquer a problem and to confine disagreements to manageable small issues.

A hammer can be used to build a house for Habitat for Humanity and provide low income housing — or as a murder weapon. The hammer doesn't care. Risk assessment can be used as a tool for democratization of the decision process or to obfuscate and conceal the basis for decisions. Like a hammer, risk assessment is merely a tool and has no moral value on its own.

The distrust of risk assessment as a decision tool stems from people's distrust of technology. Many people of all races and income levels yearn for a time when life was simpler, for the time before SUVs, cell phones and the Internet. Would these neo-Luddites have us turn back the clock to a preindustrial period? This period was also a time of inequality before widespread acceptance of civil rights for all regardless of race or income. Of course, we can't turn back the clock — nor should we wish to.

Risk assessment is unfairly viewed by the Environmental Justice Movement as a weapon against the democratization of decisions and the inclusion of all stakeholders. In truth, risk assessment is the regulatory tool our society has chosen to manage the effects of technology. The use of risk assessment enables all people, regardless of race, ethnicity, income or social status, to enjoy the blessings and suffer the curses of technology within a framework of equality and the democratic principles of America.

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