

I was one of the founders of the scientific discipline called behavioral toxicology. Toxicology is most often defined as the science of poisons. Behavioral toxicology is that aspect that seeks to understand how our behavior—what we do, what we say, what we think, how we feel, how we learn—is altered by chemicals, especially those deposited in our environment by human activities. Because the developing brain is especially sensitive to such chemicals, many of us seek to comprehend how it responds to such threats.

But I am a citizen as well as a scientist. And I feel uneasy about how the wider society overlooks the ethical dimensions of what we learn in our research.

Inequalities and injustices pervade all societies, but some are so subtle that they tend to elude notice. Our own society maintains one such imbalance in how it manages our exposure to environmental chemicals. We depend on governmental entities to do so. But we simply lack the data that would yield an unambiguous standard of exposure. Of the 70,000 chemicals in commerce today, we possess appropriate information on only a small percentage, especially when decisions have to be based on the fetus and child.

Ethical quandaries arise because the fetus and child have no voice in how decisions are made. Parents are also helpless. Like those they are charged with safeguarding, they have almost no opportunity to evade or prevent exposure to chemicals ubiquitous in the environment.

The ethical dilemmas posed by environmental exposures contrast starkly with how we evaluate new medical therapies such as drugs. When drugs are tested in volunteers, the investigators must conform to three principles:

JUSTICE. The research should strike a balance between who receives the benefits of the research and who bears its burdens.

BENEFICENCE. The research should maximize potential benefits to subjects and minimize the risk of harm.

RESPECT FOR PERSONS. The investigators should provide informed consent, so that subjects enter into research voluntarily and with adequate information.

None of these principles are adhered to in how we manage the risks of environmental chemicals. Justice is contradicted because the benefits of chemical manufacture largely accrue to the suppliers while the risks are borne by the public. Beneficence is contradicted by the fact that the subjects, ourselves, receive no tangible benefits while we face the potential for harm. Respect for Persons is contradicted because we are not given the relevant information about risks and then permitted to decide if we agree to assume them.

All three ethical principles are violated by current practice. We are unwilling volunteers in massive experiments from which we derive little material benefit as individuals. Decisions are made by bodies that impose often unwarranted and unacceptable risks on us and those we serve as guardians. It is time to apply ethical principles to decisions about our environment.

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