

Arguments for testing pesticides on humans

1. Developing pesticides is extremely costly, risky, and time-consuming.

- ∅ "...\$40 to \$60 million in development costs are incurred before the first registration of a new pesticide chemical is received"
- ∅ "... takes over seven years from discovery to registration."
- ∅ "...only one in twenty thousand new chemicals tested in the discovery screening process survive"
- ∅ "...an adverse finding in the tests being conducted (such as a toxicological or environmental one) can limit the number of potential end uses or result in the termination of the project."
- ∅ Research and development . . . begins in the Discovery Laboratories, where teams of biologists and synthesis chemists prepare new chemicals and evaluate them for effectiveness in a greenhouse or small plot environment. . . field research scientists evaluate the material under expected environmental use conditions by using larger test plots out-of-doors. Shortly before and concurrently to field testing, other testing is implemented by toxicologists to determine the impact on various mammalian and other non-target organisms and by residue, environmental, and metabolism chemists who study the effects of the potential chemicals on the environment.... "

Bischoff, R.F. 1993. Pesticide chemicals: An industry perspective on minor crop uses. p. 662-664. In: J. Janick and J.E. Simon (eds.), *New crops*. Wiley, New York.

2. With fewer and more expensive pesticides for growers to use, cost of food to consumers rises.

- ∅ "Since the accelerated reregistration program started, the number of registered products has dropped from about 45,000 to less than 20,000. . . . about 5,000 to 6,000 of the canceled pesticide products were still in use at the time of cancellation."

"Reregistration of minor use pesticides: some observations and implications," in *Situation and Outlook Report: Agricultural Resources*, Feb, 1992 by Leonard Ginaessi, Cynthia A. Puffer
www.findarticles.com/p/articles/mi_m3730/is_n25/ai_12134251

3. Product liability of companies marketing pesticides is high.

- ∅ ". . . DuPont recently paid out \$120 million in claims to nursery growers from damages connected with a well known fungicide, benomyl (35)." Ginaessi, et al.

4. Testing on humans is best predictor of pesticide toxicity; result is safer chemicals for humans.

"... data obtained in humans are the best predictor of human toxicity" (McConnell 2001).

5. Testing on humans lowers food costs to the nation's poorest and neediest consumers.

Arguments against testing pesticides on humans *

1. Pesticides have harmful effects and can injure humans and the environment

"The range of these adverse health effects includes acute and persistent injury to the nervous system, lung damage, injury to the reproductive organs, dysfunction of the immune and endocrine system, birth defects, and cancer (Landrigan et al. 1999)."

2. Humans have a right not to be experimental subjects in tests that cannot benefit them.

"Since passage of the Food Quality Protection Act (FQPA) in 1996, chemical manufacturers have, with increasing frequency, assessed the toxicity of pesticides by testing them in human volunteers. The apparent purpose of these tests is to establish safe or threshold limits for human exposure, termed "no observable effect levels" (NOELs). The acceptance by the U.S. EPA of human test results in standard setting raises ethical and policy concerns (Robertson and Gorovitz 2000; Steinberg 2000). These issues include the absence of mandatory ethical guidelines for research conducted by pesticide manufacturers and submitted to the U.S. EPA, the absence of procedures for minimizing harm to study participants and for subjecting them to no unreasonable risk, and the use of approaches for obtaining informed consent by subjects participating in these studies that may be less stringent than those specified by the Common Rule (Office of Science and Technology Policy 1991)."

3. To determine "no observable effect levels" (NOELs) for pesticides in children, testing must be done on children; but testing on children is unethical.

"Ethically, it is not conceivable that a child can give informed consent to a study of pesticide administration to humans."

4. Animal testing can suffice to establish safe NOELs for humans.

"A NOEL is defined as an exposure level at which there is no statistically or biologically significant increase in the frequency or severity of any effect between the exposed population and its appropriate control (U.S. EPA 1999a). Two 10-fold safety factors are then applied. First, the NOEL observed in rodents is divided by a factor of 10 to account for the extrapolation from rodent to human. Then that number is divided by a second factor of 10 to account for variation among humans. Thus, the traditional practice had been to determine the NOEL in animals, divide that number by 100, and on that basis calculate the pesticide standard, termed a "reference dose" or "tolerance" (EWG 1999)."

"After the passage into law of FQPA, the U.S. EPA has been required, in certain instances--especially where developmental toxicity is suspected or where data on developmental toxicity are lacking--to apply a third child-protective safety factor of up to 10-fold and thus to divide the NOEL obtained in animals by a factor of as much as 1,000 (10^3) in setting human standards (U.S. EPA 2003b). Some pesticide manufacturers have increasingly undertaken testing in humans, thus bypassing the need for the first 10-fold safety factor. Testing in humans may render unnecessary the safety factor that accounts for the extrapolation from animals to humans. The net effect is that the NOELs determined in humans must be divided by a factor of only up to 100 to comply with the FQPA (U.S. EPA 2003b)."

5. Testing on humans may lead to unknown, difficult to detect, long-term cumulative illness.

* All texts quoted are from: "Pesticide Testing in Humans: Ethics and Public Policy," Christopher Oleskey, et al. *Environmental Health Perspectives* Volume 112, Number 8, June 2004 <http://www.ehponline.org/members/2004/6522/6522.html>