

# 'Zero risk' standard for pesticides makes no sense in the real world

by Robert D. Sweet

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*During the past two decades of decline in the economy, the scientific method of evaluation has come under attack from superstition, vested interests, and government circles. A recent example was provided by some testimony at a June 12 hearing by the House Agriculture Subcommittee on Domestic Marketing, Consumer Relations, and Nutrition on "The U.S. Fruit and Vegetable Industry in the 1990s." Officials from the Environmental Protection Agency, the Department of Agriculture, and other government departments repeated blatantly unscientific views of horticulture and soil science. They called for low-cost, cheap-labor agriculture, couching their concepts with praise for the merits of "organic" produce and "zero-risk" pesticides. Moreover, the administration is backing the shift of much of U.S. vegetable production to northern Mexico under the "North American Free Trade Agreement" negotiations, which, according to studies by faculty at Texas A&M University, will involve mining of the soils, very low yields, and biological degradation, not to mention serf-type labor practices—Marcia Merry.*

A small, but highly vocal group is calling for "zero risk" as the basis for regulating pesticides. This extreme view is not supported by medical experts, toxicologists, or biological scientists. These highly trained professionals are well aware that zero risk for pesticides is just as untenable as was the law passed about 40 years ago which specified zero levels in foods of added substances which could cause cancer.

Many people cannot understand why wonderful-sounding slogans or laws such as those proposing zero risk just do not work. They need to be reminded of a few basic facts about toxicity and about "zero." Absolutely nothing is toxic if the dosage and exposure are sufficiently low. Conversely absolutely everything is toxic if the dosage and exposure are sufficiently high. As to "zero," this is a problem of the technology available to measure a particular substance at low levels. For pesticides, technology for measuring extremely

minute quantities must be available before the chemical can be marketed, but no scientific techniques exist that guarantee accurate measurements for "zero" for the case of pesticides—or for any other substances.

Let us examine some everyday examples of toxicity. It is medically sound to state that heavy cigarette smoking over a period of years often causes health problems. Yet those of us non-smokers who are exposed to just a whiff of smoke a few times a week are not concerned about contracting health problems. However, what level of exposure to cigarette smoke presents zero risk to all people regardless of age or health status? The zero-risk advocates state that since this level is so difficult to establish, the only practical answer is to ban all smoking. Another example: We need oxygen to live, but it must be in appropriate amounts. The air we breathe normally contains about 20% oxygen, and our bodies function quite well with these levels. However, under certain conditions, pure oxygen for a limited time is helpful. Athletes, mountain climbers, premature babies, victims of emphysema, etc. often need pure oxygen. However, severe damage can be done with prolonged use of pure oxygen. Conversely, deprivation of oxygen for as much as a half hour or so, can result in death.

Similar situations arise regarding our needs for water, but at the same time, excessive water causes illness and even death. It is obvious that toxicity of a substance to humans is not a clear-cut process whereby certain substances are always "bad" and others are always "good." As toxicologists proclaim, it isn't the substance per se that causes toxicity, but the dose and exposure. Agriculturalists believe those who advocate "zero risk" for pesticides actually want to ban all pesticides and are using this slogan as a tactic or strategy for gaining their goal.

Some localities and states propose, and sometimes pass, pesticide regulations which put local producers at a serious competitive disadvantage, but which do little to influence the already high quality of our foods. For example, 50-75% of our fruit and vegetables contain no pesticide residues at any detectable level whatsoever. The remaining supplies contain permitted amounts which are about 1,000 times below what medical experts believe might cause toxicity. Regulatory

agencies often report about 1% of samples as being in violation. However, since these are not consistent and vary from crop to crop, locality to locality, and season to season, they do not pose a health threat. Of course, a persistent, consistent, supplier of crops with unsafe levels of pesticide residues is soon caught and put out of business.

Some anti-pesticide people try to convey the idea that most troubles from pests are really caused by or increased in severity by the use of modern pesticides. What utter nonsense! Ever since recorded time, pests have been mentioned as causes of famines. Early tribes often were forced to migrate in order to find food! Even as recently as the 1840s, potato blight caused massive starvation in Ireland. It precipitated a migration of hundreds of thousands to the United States. The culture of both Ireland and the U.S. was profoundly influenced. While potato blight is still a threat to potato production, effective fungicides are utilized at the earliest signs of the disease, and rarely is more than 1% of the crop lost. What a boon to the starving Irish, effective fungicides would have been!

For centuries, scholars have taught us the Malthus thesis that man reproduces at a faster rate than he discovers how to grow more food, and thus, it is argued, massive famines are the natural factor regulating global population levels. Happily, in the last 40 years, this pessimistic view has been laid to rest. Current technology, including synthetic chemical pesticides, permits production of food for millions more persons than now exist. Most sociologists claim that starvation, malnutrition, food shortages, etc. are due to political, economic, and sociological factors far removed from agricultural technology.

Philosophically, the call for zero risk in regard to pesticides, and not for the many other areas of our lives that are regulated by the government, is very difficult to understand, unless, of course, as mentioned earlier, this is just a "scam" for those who really wish to ban all pesticides. The list of areas which could be included in a zero-risk argument is almost endless and includes every conceivable aspect of our lives such as food, air, water, shelter, education, health care, transportation, and so on.

Do we demand zero risk from our foods? Poultry consumption has increased enormously in the last 20 years. However, poultry is a major source of salmonella, a bacterium which can cause serious intestinal upsets, and even death. Do we demand zero risk or banning of poultry? No, it's a fine food, and its benefits to people are enormous. Instead, we ask for vigorous enforcement of sanitary slaughtering requirements and caution the public that all poultry must be thoroughly cooked so that salmonella, if present, will be killed. This is just one of many food examples.

Do we demand zero risk from water supplies? Practically every municipality has a central water system, and most use chlorination as an important part of their water processing. Yet scientists have shown that there is a small but measurable

risk of toxicity from chlorination. Do we demand zero risk? No. The benefits from chlorination are enormous. Waterborne health risks like typhoid fever are practically eliminated by this process. Instead we try to have well-trained personnel running our municipal water systems so that risks are minimized—but not zero.

Do we demand zero-risk shelter? Are all our homes required to have zero risk from natural disasters such as tornadoes, earthquakes, lightning, floods, etc.? Of course not. Each of us makes decisions as to the degree of risk we are willing to accept and how much protection we can afford. Naturally we also consider the kinds of natural disasters likely to occur in a given region or at a particular site. Certainly areas of California have more risk of earthquake and less risk of tornadoes than do areas of the mid-South.

Do we demand zero risk for air quality? Here, man really shows his colors. Two primary causes of unsafe air are auto emissions and electric generating plants. While the government struggles to require lower auto emissions, the people still drive an average of 15,000 miles a year, with much of that distance covered when only one person is in the car. The same story for power plants. Only in the last 10-15 years have we made attempts to have energy-efficient homes. But while doing so, we have added all kinds of gadgets in our homes including electric tooth brushes, can-openers, etc. There has been no major reduction in the amount of electricity the average family consumes. Another alternative is to switch electric generating from fossil fuels to nuclear power. There is no question that air emissions would be lowered, but the effects of a nuclear disaster still loom rather large in the minds of the public. But where is "zero risk" when creature comforts are involved?

### **Aspirin could not pass**

What about zero risk in the medical arena? Medicines must go through about the same kinds of tests for safety as do pesticides before they can be marketed. In fact, old standbys such as aspirin could not pass current tests for safety. Who advocates "zero risk" for either old or new medicines? The public asks for reasonable chances for efficacy, and a reliable explanation of possible adverse effects. The doctor and patient arrive at decisions on an individual basis, and zero risk isn't demanded by either.

Zero risk is a powerful political and emotional slogan, but it makes no sense in the real world. We could not live under such constraints, because everything connected with our lives carries some degree of risk. Those who single out pesticides for the unworkable slogan of zero risk probably fall into one of two categories: They are unaware of how safe our present food supplies are, or they do not understand the terrible consequences to world food supplies if zero risk from pesticides ever became a global policy. Indeed Malthus's pessimistic view of man and his capacity to reproduce versus his inability to grow enough food would once again become accurate.