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by

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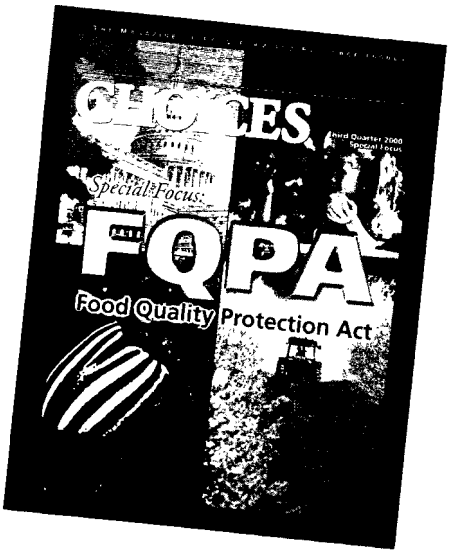

FQPA:
Pouring Out (In?) The Risk Cup

BY SCOTT M. SWINTON AND
SANDRA S. BATIE

The Food Quality Protection Act (FQPA) of 1996 is the U.S. government's current law balancing potential consumer health risks from pesticide residues against potential farm income risks from reduced chemical crop protection. As reflected by the debate in CHOICES' last issue, the nitty-gritty of FQPA implementation has pitted agricultural producer interests against consumer and environmental interests in a struggle over measuring acceptable pesticide risk. In this article, we take a fresh look at the fundamentals of the FQPA using ideas from environmental economics on how to minimize the costs of complying with societal norms for health risk exposure.

It may be time to think outside the box (cup?) to allocate risk cup access among pesticide users.

The FQPA radically transformed U.S. pesticide policy. Along the way, it incorporated two important principles from environmental ethics: the precautionary principle, and accounting for aggregate exposure from all sources. But it failed to incorporate a third environmental policy design principle: allocating allowable risks to the most highly valued uses. Environmental economics offers several approaches for such an allocation. Examples include developing a market for pesticide risk, and establishing pesticide residue standards for retail food products. If implemented, either approach could potentially lower the costs of FQPA compliance, mainly by enhancing grower and processor flexibility.

However, these approaches have drawbacks. They either violate the FQPA mandate of ensuring "no harm" to sensitive individuals and/or ask sensitive individuals to take action to protect themselves. The latter requirement would break with a longstanding U.S. tradition of protecting all the public from safety risks.

Despite these drawbacks, an examination of these two approaches illuminates the important role that research and development can play to lower the opportunity costs of FQPA, as well as the importance of flexible rules that allow for grower and processor experimentation and adjustment in meeting exposure standards.

As the U.S. Environmental Protection Agency (EPA) develops regulations to implement the FQPA, "the devil is in the details," as Linda-Jo Schierow of the Congressional Research Service aptly put it. Incorporating more environmental policy design principles could be instrumental in meeting the Act's safety mandate in a manner that keeps U.S. farming efficient and profitable.

FQPA and the "Precautionary Principle"

As environmental policy, the FQPA makes revolutionary inroads by incorporating two basic ideas from environmental ethics: the precautionary principle and a focus on health risk from total exposure.

The FQPA represents a major break with previous pesticide regulatory policy, which gave considerable weight to the benefits of pesticide use. The FQPA applies to pesticide risks the European concept of the precautionary principle, requiring that regulatory action be taken before uncertainty about possible environmental or health damages is resolved. For food safety, this principle rejects the assertion that absence of evidence of harm necessarily equates with safe food, a perspective that is frustrating to many growers. FQPA regulators are to consider only those health risks and benefits that accrue to consumers in establishing pesticide tolerances. Compliance costs are not germane.

Is it possible for these opposing views to reach some lasting truce?

A jury trial provides a useful analogy in understanding the precautionary principle. Essentially, FQPA rejects the previous pesticide policy of avoiding a Type I error; that is, wrongfully "convicting an innocent pesticide." In its place, FQPA's policy is that of avoiding a Type II error; that is, wrongfully "acquitting a guilty pesticide."

The rationale for this approach is that researchers cannot accurately predict the social costs of new pesticides; that is, they cannot predict with certainty whether new pesticides will ultimately cause health problems. Advocates of the precautionary principle point to a history of chemical uses, which, while initially thought safe, ultimately proved to have negative health impacts (Wargo).

The second environmental ethics principle embodied in the FQPA is the focus on total exposure from all sources. The "risk cup" mechanism is a pesticide-exposure performance standard for chemicals sharing a common toxic mode of action in humans: FQPA limits an individual's permissible exposure stemming from all food and non-food sources. The risk cup notion supports the precautionary principle by protecting against excessive aggregate health risk to individuals from multiple sources.

How To Fill The Risk Cup?

By focusing on the most sensitive individuals and on combined exposure from all pesticides having a similar health effect, the FQPA will undoubtedly require sharply reduced use of certain higher-risk pesticides. Agreement on this likely outcome underlies both the tone of alarm in Keith Eckel's farmer perspective and the "stay the course" tone behind Chuck Benbrook's consumer perspective (see *CHOICES*, Q3 2000).

Is it possible for these opposing views to reach some lasting truce?

The basis for such a truce must be compliance with the law. All agree this will entail a reduction in pesticide availability. So far, however, virtually all discussions have assumed that EPA would implement the FQPA in the same fashion that it did FQPA's predecessor – by registering or "de-registering" specified pesticide uses.

But the risk cup makes FQPA fundamentally different from the prior legislation. To many growers, FQPA's downside is that it will lower aggregate tolerance of many pesticide risks. The upside of the risk cup approach is that risky pesticides are permitted, so long as the risk cup poses what the Act calls "a reasonable certainty of no harm" to sensitive sub-populations. The challenge becomes an economic one: How to allocate access to the risk cup's socially acceptable levels of pesticide risk exposure among would-be pesticide users?

Several approaches exist for allocating pesticide risk. Two are particularly innovative in the FQPA context. Both approaches build on a principle of environmental economics that has been missing from the FQPA: that compliance costs for achieving public environmental goals tend to be lower when there is producer flexibility in pursuit of performance outcomes (Batie and Ervin). The first approach is to create a market for shares in the risk cup. The second is to set pesticide residue standards by crop.

A Market for Pesticide Risk

Creating a market for pesticide risk would begin by dividing the risk cup for a given pesticide group into quantified risk shares. It would distribute those risk shares and to create a market mechanism in which participants could trade risk shares. The accompanying box on page 16 suggests some possible steps. Such a market for risk would be directly analogous to those already created for sulfur dioxide trading. However, as in the case of current experimental markets in non-point source water pollution trading, the pesticide risk market would have many potential traders.

Conceptually, the appeal of tradable pesticide risk shares is that they would allow growers flexibility at a cost. The grower who absolutely must use risky Pesticide X could buy risk shares from a grower who would prefer to use Pesticide X, but would be willing to use Pesticide Y if offered adequate compensation for his risk shares in X. The risk market would allow risky pesticides to be used by those growers who would suffer the most by being denied access, thus reducing producer

Establishing a Market for Pesticide Risk

Establishing a market for pesticide risk might follow these four steps:

1. **Define the maximum allowable annual exposure risk** (the capacity of the "risk cup"), measured in a standard risk unit. This maximum might be denominated in some form of standard pesticide-equivalent units for pesticides with a common mode of action. For example, risk levels for organophosphate insecticides might be measured in "malathion-equivalent" units.

2. **Associate a level of risk with each pesticide use** (e.g., "malathion-equivalent" risk units per unit of pesticide X in use Y).

3. **Let the federal government sell or grant property rights** to dated shares of the maximum allowable annual risk.

4. **Require that pesticide users acquire the necessary risk shares** and "pay" a government agency (or other holder of such property rights) the sum of risk shares that corresponds to the pesticide they need. (Ensuring compliance with stated pesticide uses may require pesticide uses to be implemented by licensed and bonded pesticide applicators.)

adjustment costs to FQPA implementation. This approach would also provide incentives for innovation of new technologies to target pesticides more effectively. If carefully designed, the established market could be largely self-sustaining, albeit requiring some enforcement costs to ensure no risky pesticide use without submission of commensurate risk shares. The set-up costs to define and distribute tradable risk shares could be substantial, even apart from the scientific effort of defining the risk cup for each pesticide group.

The big drawback of marketable risk shares is that they would not ensure the "no harm" mandate for sensitive individuals who consume disproportionate quantities of a food on which growers use high levels of pesticides. For example, if lack of alternative insecticides drives pear growers to corner the market on organophosphate pesticide risk shares, then toddlers who like pear juice may be exposed to unacceptable levels of dietary risk under this scheme.

The potential cost-efficiency of marketable risk shares could be preserved within the "no harm" mandate if the onus of protection were shifted to the sensitive individuals themselves. For example, families with young children could receive special payments or tax deductions to permit them to buy organic foods to meet the "no harm" mandate. Indeed, supporting self-protection by sensitive individuals could permit a higher risk threshold for other adult individuals, potentially boosting the size of the risk cup tenfold. However, this modification would break with the longstanding U.S. tradition of public protection from risks to the food supply, and would be hard to sell politically.

Marketable risk shares... would not ensure the "no harm mandate" ...

Pesticide Residue Limits

A second FQPA implementation approach that could preserve the "no harm" mandate to sensitive individuals would be pesticide residue standards for retail food products. Such performance standards would be based upon EPA's conservative assumptions for dietary risk from a given food. But they would allow producers flexibility in remaining below that threshold. This flexibility would permit, say, low-dose sprays as well as sprays followed by thorough washing to remove residues. Indeed, such a rule would foster new research into alternative ways of reducing residues – a line of cost-effective risk-reduction research that becomes pointless if pesticides are banned.

One drawback of pesticide residue limits is that they would be costly to enforce. To become feasible, they would require low-cost methods of residue detection in large numbers of samples. Residue testing is currently performed on only a tiny fraction of imported fruits and vegetables. Expanding the program to cover all plant-based food products would be a daunting task. However, the very fact that a small system for testing is already in place makes it easier to imagine political support for large-scale implementation than for the tradable pesticide risk share approach.

A second drawback is that pesticide residue limits would not cover pesticide exposure via non-food channels. As such they would depart from the complete risk-cup approach, albeit focusing on the main source of public fears about pesticide risks.

Thinking Outside the FQPA Box

Marketable pesticide risk shares and pesticide residue limits are but two of several conceivable ways to comply

with the intent of the FQPA while allocating pesticide residue risks more efficiently than the current EPA approaches. Both illustrate the potential gains from a more flexible approach, not only for keeping compliance costs low in the near term but also for inducing pest management innovations to lower compliance costs further in the long term. However, each of these approaches also comes with significant drawbacks, either in scope of risk protection or in regulatory costs. Keeping compliance costs low for producers is not enough; policy makers must also contain regulatory costs.

Stakeholders will need fresh policy research to address these drawbacks. The first step must be to break out of the mental box of using pre-FQPA pesticide legislation as a model for FQPA implementation. That mental box has led FQPA interest groups to argue mainly over rules for registration of individual pesticides. The broader challenge is how to allocate pesticide risks flexibly while conforming to the precautionary principle.

Editor's note: The topics covered in this article draw upon material previously published in the Special Focus "The Food Quality Protection Act" (see CHOICES, Third Quarter 2000, pp. 17-32). Contact AAEA or Clear Window Multimedia for additional copies.

For More Information

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AAEA Calendar

April 1-4
- North American Fisheries Economics Forum — New Orleans, LA

April 8-10
- WCC-101 Meeting — Sonoma, CA

April 13-May 15
- AAEA Elections

April 23-24
- NCR-134 Conference "Applied Commodity Price Analysis, Forecasting and Market Risk Management" — St. Louis. MO

May 1
- Foundation travel grant applications due
- YBS Scholarship applications due
- Applications for AJAE Editorships due

June 11-13
- 2001 NAREA Annual Meeting — Bar Harbor, ME

June 12-14
- Young Professionals Conference

The Exchange is the newsletter of the American Agricultural Economics Association.

Additional information on these and other dates may be found at the AAEA web site (http://www.aaea.org).