The Food Quality Protection Act
And Its Impact on Turfgrass Management

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One of the most recent laws regulating pesticide use in the United States was signed by President Bill Clinton during the summer of 1996. This bill, the Food Quality Protection Act (FQPA), is beginning its third year, but much uncertainty still surrounds its overall effect on pesticide availability. Even less clear is the impact the FQPA will have on the turfgrass industry in the area of integrated pest management. But before we get into the possible implications of the FQPA or your ability to manage high quality turfgrass, it is important to understand the purpose and intent of the law.

What's the FQPA all about?

The FQPA was developed as a replacement for provisions that were considered to be outdated. It amends provisions of two statutes related to pesticides: the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA) and the Federal Food, Drug and Cosmetic Act. Under the FQPA, a uniform health based standard is applied to raw and processed food, children's health is the top priority and consumers have a right to know about pesticides in the food they buy at the grocery store.

The principles involved in developing the FQPA include using sound science, protecting children, protecting the environment, streamlining the regulators process, and preventing pollution. Such principles generated strong support from President Clinton, Vice President Al Gore and EPA Administrator Carol Browne. The U.S. Congress unanimously passed the bill. President Clinton stated that it proves we don't have to choose between a healthy environment and a healthy economy

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One major change is the inclusion of a ten-fold safety factor to ensure that tolerances are protective of children. The new approach for setting tolerances is tough. It requires a complete and realistic data base of pesticide use and exposure. Of great importance to the use of pesticides in the turfgrass industry is that the FQPA requires an evaluation of aggregate exposures. In other words, looking at all the possible avenues in which the public might encounter pesticides.

The Food Quality Protection Act is a very ambitious new set of standards. It is ambitious, not only in the sense that it is modernizing the pesticide review process, but it strives more than ever to integrate the best available science into the system. In addition, the EPA is required to review all pesticide tolerances within ten years.

The timetable to review thousands of tolerances requires a quick turnaround time by the EPA. All new and existing pesticide registrations must meet the new safety standard. Over 9,000 tolerances must be reviewed within ten years.

The law also directs the EPA to develop a process to speed the review and registra-

tion of pesticides that reduce risk to human health, non-target organisms and ground and surface water. Also included are the development of procedures to broaden the adoption of integrated pest management strategies. Improving the registration process for safer pesticides will give the end user of pesticides more options for integrated pest management. An important provision of the FQPA is that it seeks *stakeholder* (that means you and me!) and *public* involvement in the whole process. Various advisory committees such as the Tolerance Reassessment Advisory Committee, Pesticide Program Dialogue Committee, Food Safety Advisory Committee and the Endocrine Disruption Screening and Testing Advisory Committee provide stakeholder input and provide guidance to the EPA

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In summary, the key provisions are:

- The FQPA is a single, health-based standard that includes all non-occupational exposures to pesticides with a common mechanism of toxicity when setting a tolerance.
- The FQPA has special provisions for the safety of children and infants.
- In addition, while there is little consideration of the benefits of pesticides, new processes have been established to expedite the review of safer pesticides.

Why will it affect current pesticide registrations?

One significant change to the setting of residue tolerances is the need to consider both the aggregate exposure to pesticide residues (including food, drinking water, and residential use) and the exposure to all pesticides with a common mechanism of toxicity. A major challenge is that all of this must be accomplished within ten years.

A tolerance is the amount of pesticide residue that can legally be present in or on food. The FQPA has dramatically changed the way pesticide tolerances are determined. Before the FQPA became law, each pesticide was individually examined when establishing a residue tolerance. Under the directives of the FQPA, the EPA must now consider the *cumulative* effect of all pesticides with a common mechanism of toxicity. A common mechanism of toxicity would mean all pesticides that act in the same manner on human health.

An example of this would be the organophosphate insecticides. The organosphosphate insecticides (OP) have historically been products that have enjoyed widespread use in agriculture, landscape, turf as well as in and around the home. They include products such as chlorpyrifos, malathion and diazinon. Since all these OPs have a common mechanism of toxicity, the cumulative effects of *all* of them is considered when establishing a residue tolerance for *one* of them. This is a significant change from how tolerances were established in the past.

Of equal significance and impact is that the EPA must combine the risks of dietary exposure from the pesticide's use on food crops in agricultural use, along with the risks of residue potentially found in drinking water and from residential use. This residential use can be household pest control, lawns and other exposures like golf courses. The FQPA is not just to protect food from harmful residues, but to keep total human exposure to a safe level.

Putting all of these exposure data, for all uses of pesticides, with similar modes of action produces large, complicated sets of numbers. How does the EPA then set tolerances for all their exposures? They are using the concept of "risk cup." A risk cup, when full, represents the amount of pesticide that a person could receive every day for 70 years without significant health risks. The size of the risk cup is determined through laboratory animal studies. These studies determine the no-effect level of exposure for a specific pesticide. To determine the daily/lifetime safe exposure for humans, this amount is then reduced by a 100 to

CHARACTERISTICS OF ORGANOPHOSPHATE INSECTICIDES

1. Generally more toxic to vertebrates (including mammals) than other current insecticides.
2. One of the older classes of pesticides on the market (many products developed in the 1940s and 1950s).
3. Originally sought as a less persistent alternative to the persistent organochlorines (e.g., DDT).
4. Act on the nervous system by inhibiting enzymes known as acetylcholinesterase.

10,000 fold factor. Once a risk cup for a pesticide group (such as the organophosphates) is full, then new uses will be difficult to establish.

In reality, the risk cup for many pesticide groups such as the organosphosphates and carbamates may already be overflowing. This is because many of those products have very wide uses. If a group of pesticides exceeds the risk cup capacity, then some uses must be restricted or eliminated to reduce the exposure risk to an acceptable level. These use changes could be the label applications on turfgrass.

Which products will this affect and how quickly will it happen?

The EPA has developed a timetable to pursue those products they feel pose the greatest human health risk. The first group includes the organophosphate insecticides, carbamate insecticides and the carcinogens. The process to begin a comprehensive analysis of the organophosphate insecticides began in the summer of 1998. The original schedule called for a complete analysis of the organophosphate insecticides by August 1999. As previously stated, this is an ambitious timetable for such a large undertaking, considering all the data and stakeholders involved. Recently, the EPA has acknowledged that it will not be able to meet the August deadline for completing the reassessment of the organosphosphate and carbamate insecticides.

An example of a product under review is chlorpyrifos. One trade name in turf and residential uses is Dursban and one in agricultural is Lorsban. Chlorpyrifos is used extensively in agriculture, for termite and roach control and by many homeowners, lawn care companies, commercial property managers and golf course superintendents. A lot of uses of just one of a number of organophosphates can add a lot the OP risk cup. There are several OPs used on turfgrass and many more in agriculture.

Will some uses of chlorpyrifos be deleted? It would seem very likely. At this time, it would be speculative to try to guess what changes might result in the chlorpyrifos use label.

Another factor that may affect pesticides with multiple uses, is that in general, the EPA will allow a range of 5% to 20% of the total risk cup be set aside for nonoccupational pesticide exposure (such as golf courses, sports fields and home lawns) and the remaining 80% to 95% must be left for dietary risk.

Economics, market shares, risks and other factors will undoubtedly play a role when manufacturers have to work with the EPA to reduce the overflowing level for a risk cup.

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Whether or not a manufacturer or registrant decides to keep agricultural or golf course uses may depend on which use site is most profitable or which use adds the most to the risk cup. Sometimes risks and the cost of developing data bases about certain uses are greater and thus less attractive uses to maintain.

Other companies may try to outguess competitors and risk maintaining a use they think they can gain a larger market share because a competitor will delete a product use from its label. All of this will be interesting to watch as it sorts itself out. Much of it may not be completed until the eleventh hour.

How will this affect me as a turfgrass manager?

Will the FQPA affect pesticide availability and use on turfgrass? I think without reservation we can say yes. We have already heard news of several recent pesticides canceling turf use sites, probably in conjunction with the FQPA. Without a doubt, some products currently registered for turf will not be labeled for such uses in the future. Just how many and how soon is anyone's guess.

Other possibilities for change include label modifications that might reduce the EPA perceived human risk from pesticide use in turfgrass. This could include rate reductions, reduced number of applications per year, extended reentry periods or buffer areas. Such changes could reduce a product's contribution to the risk cup, but at the same time could reduce the product's profitability for the manufacturer.

One area in this whole process that remains a point of controversy for many is the process by which the EPA determines exposure. This whole concept is based upon how much product is used at each label site. Some use sites have excellent data bases that accurately document the rates used and number of applications. In some cases, much less reliable data on pesticide use are available. When such data gaps exist, the EPA may be forced to use default assumptions. This basically means they must

COMMON TURF INSECTICIDES UNDER FQPA REVIEW

Common Name	Examples of trade name[1]	Class	Pests commonly treated
carbaryl	Sevin	carbamate	caterpillars, white grubs, chinch bugs
bendiocarb	Turcam	carbamate	white grubs, chinch bugs
chlorpyrifos	Dursban	OP	mole crickets, caterpillars, fire ants, chinch bugs, billbugs
acephate	Orthene	OP	mole crickets, caterpillars, fire ants
trichlorfon	Dylox	OP	white grubs
isofenphos	Oftanol	OP	white grubs, mole crickets, billbugs, chinch bugs
ethoprop	Mocap	OP	mole crickets

[1] Listing of trade names does not constitute produce endorsement nor discrimination against products not mentioned.

assume the worst scenario. In other words, that the pesticide is used at the maximum use rate, and the maximum number of times allowed on the label during the season. While we may all know this is not how most pesticides are used, when in doubt, the EPA must err on the side of safety.

User testimonials may carry substantial weight in helping the EPA make wise decisions. While the land-grant universities have been involved in providing crop profiles (including turfgrass) to the EPA to help determine pesticide uses (organophosphates and carbamates) and the importance of each product, every turfgrass manager has an opportunity to provide input on the process to the EPA.

The FQPA can be a powerful tool to enhance public confidence in the pesticides that we use in turfgrass management. I feel we can use this legislation to our advantage in the turfgrass industry.

Let's assume a pesticide use for turfgrass is deleted. In many cases, cost-effective alternatives may be available. Should there be situations in which products will be lost due to the FQPA, a transition period will most likely be established. This transition period will allow time for alternative pest strategies to be developed. The U. S. Dept. of Agriculture will work closely with the EPA to assure smooth transitions.

Finally, one might ask if there are truly any real benefits to the turfgrass manager as a result of the FQPA. First, it replaces the outdated and unacceptable Delaney Clause that had previously regulated pesticide use. Second, it provides incentives for the development and more rapid registration of low risk pesticides, which is something we would all like to see. In addition, it ensures that our exposures to pesticides are safe. Finally, the FQPA can be a powerful tool to enhance public confidence in the pesticides that we use in turfgrass management. I feel we can use this legislation to our advantage in the turfgrass industry. We can state, without reservation, that we are working under the strictest guidelines ever, that President Clinton called the peace of mind act. While the new law may provide challenges, at the same time, let's use it to our advantage as an effective public relations tool documenting the safety of our pest management programs.

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