Pesticide applicators often wish to learn more about the risks associated with the chemicals they encounter in their workplace. Potential cancer risk often comes to mind. Although Material Safety Data Sheets provide some information on how carcinogenic a given pesticide may be, deciphering the information may not be that easy. Fortunately, turf applicators now have a new resource for this information. Although created for New York State, it should be useful to Illinoisans as well.

The Program on Breast Cancer and Environmental Risk Factors (BCERF) is located at Cornell University. The program specializes in turning science into clear information you can use in your life and in your work to reduce your risk of cancer. It is grant-funded by the New York State Departments of Health (DOH) and Environmental Conservation (DEC), as well as the United States Department of Agriculture (USDA).

The BCERF program has recently launched an easy-to-access, searchable, online database that provides cancer-risk information for chemicals found in over 2,800 turf and lawn-care pesticide products. The “Turf Pesticides and Cancer Risk Database” at http://envirocancer.cornell.edu/turf/ integrates information on chemicals evaluated for carcinogenicity by the U.S. Environmental Protection Agency (EPA) with 111 active ingredients found in turf and lawn-care pesticides registered for use in New York State.

Users can search for information several ways: by product (1) or active ingredient (2), or by cancer-risk category (3). (Boldface numbers in parentheses refer to callouts on the screen captures, Figures A to D.)

Search several ways.

Find cancer-risk information.

Cancer-risk information in the database is available in several forms. Users can look up or search by the EPA cancer-risk category assigned to a particular chemical active ingredient, such as “Carcinogenic to Humans” or “Possible Human Carcinogen.” Detailed descriptions are provided by clicking on the Cancer Risk Categories link in the More Info box on the left side of the page (4).
Figure A.

http://envirocancer.cornell.edu/turf
is BCERF’s newest database
Additional cancer- and other health-risk information is included in EPA risk-management documents that are available for some but not all of the active ingredients in the database. The Bibliography (5) provides a complete listing of the risk-management documents currently available. These documents are also provided on the Results page for each active ingredient search where available. Risk-management documents, known as Re-registration Eligibility Decisions, or RED documents, are documents provided by EPA as part of the pesticide re-registration process. For each chemical being re-registered for use in a pesticide product, the documents provide details on how the EPA evaluated the chemical and its associated human and environmental health risks and determined what levels and types of use would be acceptable.

Additional detailed information about pesticide registration and re-registration is available in the More Info box (6). Information on interpreting cancer risk is also available to view or print (7).

Find pesticide products.
Because the full names of pesticide products are often long and complicated, a search using one or more keywords (8) enables quick and easy access to corresponding products. Products in the database are limited to those that have ever been registered for turf and lawn use in New York State, and then only those that include active ingredients evaluated for cancer risk by EPA. Cancelled products (9) are included because BCERF focus groups with turf pesticide applicators revealed that many applicators are interested in the risks of products that they may have used in the distant past but no longer use. Product results can be sorted by name alphabetically or by EPA registration number (10).

Get product details.
Clicking on a product takes you to the Product Details page (11), where product-specific information can be found. Terms on this page and elsewhere in the database are hyperlinked to their definitions in the Glossary (12), which is always a click away on every page in the database.

*Figure B.*
the Search & Help box on the left side of the page. Clicking on a product’s active ingredient (13) takes you to the Active Ingredient page for that particular chemical.

Get active ingredient details.

You can get to the Active Ingredient page from the Product Details page, the Browse All button or the Active Ingredient menu on the Home/Search page, or via the active ingredient list produced from a cancer risk category search. Once you arrive here, a variety of active-ingredient-specific information is available, including the cancer-risk category (14) and the species of laboratory animal tested and tumor types found (15). An important note on this page informs users that cancer-risk classifications are specific to active ingredients, not products, and that a variety of risk information found in EPA risk-management documents should be used to estimate the actual cancer risk associated with use of a particular pesticide product (16). Links to Interpreting Cancer Risk, EPA risk-management documents, and turf and lawn-care products that include the active ingredient are included on this page.

At this time, the “Turf Pesticides and Cancer Risk Database” does not include all active ingredients and associated turf and lawn-care products registered in New York State. Cancer risk has not been fully evaluated for many active ingredients. Cancer-risk information is not available for all chemicals because federal pesticide registration laws have, until recently, only required full evaluations of cancer risk for chemicals that will be used in pesticides that also have food-crop uses. Federal legislation effective October 1, 2006, now requires that, over time, all chemicals proposed for pesticide registration or re-registration be evaluated for a variety of health risks, including cancer. The process of accumulating new cancer-risk information on these chemicals will take many years. The “Turf Pesticides and Cancer Risk Database” will be updated as this information becomes available. (Original article by Heather Clark, Ph.D., BCERF Research Associate; adapted by Michelle Wiesbrook.)
EPA’s Big Deadline: August 3, 2006

With the 1996 enactment of the Food Quality Protection Act (FQPA), Congress presented the U.S. Environmental Protection Agency (EPA) with the enormous challenge of implementing the most comprehensive and historic overhaul of the nation’s pesticide and food-safety laws in decades. The centerpiece of FQPA was the requirement to complete, within a decade, the massive review and reassessment of the tolerances (maximum permitted residues) for all food-use pesticides. August 3, 2006, marks the tenth anniversary of FQPA enactment, and EPA reports completion of over 99% of the required tolerance reassessments. Along the way, EPA and others encountered many challenges due to the comprehensive nature of this new law. Following are the main provisions in the law and brief descriptions of how the agency addressed each. (For more detail, see reference #1 at the end of this article.)

Improved Health Standards for Food Commodities
- FQPA requires a new safety standard—reasonable certainty of no harm—that must be applied to all pesticides used on food commodities.
- FQPA requires EPA to reassess all existing tolerances within 10 years.
- FQPA requires EPA to set tolerances for residues resulting from uses allowed under FIFRA section 18 emergency exemptions.
- FQPA requires EPA to consider risks to infants and children when setting tolerances.
- FQPA requires EPA to consider all “aggregate risk” from exposure to a pesticide from multiple sources when assessing tolerances.
- FQPA requires EPA to consider “cumulative exposure” to pesticides that have common mechanisms of toxicity.
Reduced-Risk Pesticides
• FQPA mandates EPA to expedite approval of “reduced-risk” pesticides.

Minor Uses
• FQPA authorized EPA to give special consideration to minor uses.

Public Health Pesticides
• List pests of significant public health importance.
• Special consideration to pesticides with public health uses.
• Encourage the safe and necessary use of methods to combat and control pests of public health importance.
• Waivers of maintenance fees for public health pesticides.

Antimicrobial Reform
• FQPA mandates EPA to expedite review of applications to register antimicrobial products.
• FQPA exempted certain antimicrobial pesticides from the pesticide-container provisions of FIFRA.

Endocrine Disruption
• FQPA requires EPA to screen pesticides for endocrine disruption.

Registration Review and Fee Collection
• FQPA requires periodic review of pesticide registrations (with a goal of every 15 years).
• FQPA mandated changes in tolerance fee collection.

USDA Initiatives
• FQPA requires food-consumption surveys.
• FQPA requires the collection of pesticide-residue data.
• FQPA requires the collection of pesticide-use data.

• EPA developed science policies regarding risk assessments.

• FQPA requires the promotion of Integrated Pest Management (IPM).

Integrated Pest Management (IPM)
• FQPA requires EPA to implement IPM education programs.
• FQPA requires EPA to implement IPM research and demonstration.

Harmonization of Standards and Requirements
• FQPA encourages the harmonization of tolerances with international standards, as established by Codex.
• FQPA requires national uniformity of tolerances.
• FQPA mandated EPA to coordinate federal and state data requirements.

Consumer-Right-to-Know
• FQPA mandates development and distribution of a food-safety brochure on health effects of pesticides.

Performance Reports
• FQPA mandated EPA to report annually on the progress of its reregistration program.

ALL pesticide uses are affected.
Regardless of how or where you use pesticides (production of food, livestock, or ornamentals; or landscape maintenance, etc.), you likely have noticed (or will notice) the effects of the FQPA. As alluded to above, EPA has been reviewing individual pesticide active ingredients, trying to account for the “aggregate risk” due to occupational use, as well as exposures from dietary and nondietary sources (such as drinking water, residential lawns, golf courses, parks, garden plots, ornamental plants, pools, paint and wood preservatives, indoor applications, pet applications, pesticide drift). As outlined in the December 1997 issue of the Illinois Pesticide Review newsletter (www.pesticidesafety.uiuc.edu/newsletter/ipr12-97/ipr12-97.html), when a particular pesticide poses an unacceptable level of risk, it either has to leave the market or the label has to change. These are both forms of risk mitigation. Label changes may be subtle and unimportant to the applicator, or they may have high impact, such as when specific uses are eliminated (either due to excessive risk or perceived lack of support). In some cases, hardships due to label changes can be minimized or prevented by speaking up and informing EPA of the unique value that a pesticide has to your type of operation (more on this later in this article).

Reregistration summary
Reregistering food-use pesticides meant not only that EPA reassessed their tolerances but also that EPA evaluated the safety of those pesticides for workers and the environment. This effort entailed review of tens of thousands of new studies—a significant amount of additional work to accomplish in 10 years. EPA has completed nearly all of this work:

• Completed 9,637—over 99%—of the 9,721 tolerance-reassessment decisions required by FQPA
• Recommended the revocation of 3,200 tolerances
• Recommended the modification of 1,200 tolerances
• Confirmed the safety of 5,237 tolerances

In completing these tolerance-reassessment decisions, the agency also has completed

• Reregistration actions or eligibility decisions for 559—almost 99%—of the 566 reregistration eligibility decisions due by August 3, 2006.
• These actions include the cancellation of nearly 4,400 individual pesticide end-use product registrations out of a current universe of 17,592. (Note: This does NOT mean that 4,400 pesticide active ingredients were canceled; the EPA does not maintain a list of canceled pesticides [www.epa.gov/pesticides/regulating/restricted.htm]).
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• EPA plans to complete reregistration eligibility decisions for the remaining 47 non-food-use pesticide reregistration cases by October 3, 2008, as required by the 2004 amendments to FIFRA contained in the Pesticide Registration Improvement Act (PRIA).

Were any new products registered?
According to EPA annual reports (Table 1), 254 new active ingredients were registered during fiscal years 1996 through 2005. Of these new active ingredients, 46% were biopesticides or plant-incorporated protectants (PIPs), 30% were conventional pesticides, 16% were conventional reduced-risk pesticides, and 8% were antimicrobial products.

What’s next?
Make no mistake, the act of reviewing and reregistering pesticides did not suddenly end with August 2006 anniversary date. By law, it must (and should) continue. In fact, EPA published its final rule for the registration-review program in the Federal Register on August 9, 2006, (for more detail, see reference #4 at the end of this article) that will guide the agency into the future. The goal of the registration-review program is the review of the registrations of all pesticides every 15 years to determine whether they still meet the standard for registration. EPA will need to open 45 or more cases per year early in the program to be on a path to meet its goal. A case consists of one or more active ingredients that are so closely related in chemical structure and toxicological profile as to allow common use of some or all of the required data for hazard assessments. EPA’s review schedule shows which chemical cases are expected to begin the review process during the first 4 years of the program (fiscal years 2007 through 2010). There are currently 678 registration-review cases, comprising 1,077 active ingredients:

- Conventional pesticides: 450 cases and 606 active ingredients
- Conventional Reduced-Risk pesticides: 116 cases and 215 active ingredients
- Biochemical pesticides: 70 cases and 156 active ingredients
- Microbial pesticides: 42 cases and 100 active ingredients.

You have the right and the opportunity to speak up and influence the decisions that may impact you. Despite the learning curve, the current and future reregistration and review processes deserve your attention and participation. To learn how to participate in this process, see the March 2006 issue of the Illinois Pesticide Review newsletter (www.pesticidesafety.uiuc.edu/newsletter/html/200602b.html).

This article was adapted from the following sources:

(Bruce E. Paulsrud)

<table>
<thead>
<tr>
<th>Table 1. New Active Ingredients Registered by EPA During Fiscal Years 1996 Through 2005*</th>
</tr>
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<tbody>
<tr>
<td>Total new active ingredients registered</td>
</tr>
<tr>
<td>• Conventional</td>
</tr>
<tr>
<td>• Conventional Reduced-Risk</td>
</tr>
<tr>
<td>• Biopesticides and PIPs</td>
</tr>
<tr>
<td>• Antimicrobials</td>
</tr>
</tbody>
</table>

*FY 2006 data not available from www.epa.gov/oppsrrd1/reregistration/reports.htm
New Pesticide Container and Containment Regulations

The U.S. Environmental Protection Agency (EPA) established new pesticide container and containment regulations on August 16, 2006. The new regulations comprise 109 pages of the Federal Register and can be found at http://a257.g.akamaitech.net/7/257/2422/01jan20061800/edocket.access.gpo.gov/2006/pdf/06-6856.pdf. There is a 19-page synopsis of the regulations, called “Final Pesticide Container and Containment Regulations at a Glance” located at http://www.epa.gov/pesticides/regulating/containers.htm.

These standards address nonrefillable containers, refillable containers, repackaging pesticide products, container labeling, and containment structures. Nonrefillable containers, container labeling, and containment structures must be compliant with the new regulations by August 16, 2009. Refillable containers and repackaging pesticide products must be compliant with the new regulations by August 16, 2011. From 2006 through 2007, USEPA will be working with states to make sure that state regulations reflect the new federal regulations.

The new container regulations are aimed at minimizing exposure to humans during container handling and making the containers easier to be disposed of or recycled. The new containment regulations seek to protect the environment from spills and leaks at bulk-storage sites and during refilling and dispensing.

Nonrefillable pesticide containers are to comply with U.S. Department of Transportation (DOT) design, construction, and marking standards. Other regulations refer only to restricted-use pesticides and pesticides in toxicity categories 1 and 2. These regulations concern container dispensing capabilities for liquid pesticides in 5-gallon or smaller containers, standard container closures for agricultural pesticides, residue removal for rigid containers 5 gallon or smaller of dilutable pesticides, and recordkeeping.

Refillable containers must also comply with U.S. Department of Transportation (DOT) design, construction, and marking standards. Other regulations concern serial number marking, one-way valves or tamper-evident devices for all pesticides except swimming pool antimicrobials. Stationary containers containing at least 500 gallons of liquid or 4,000 pounds of dry pesticide must comply with integrity, vent, shutoff valve, and external sight-gauge requirements.

Regulations regarding repackaging pesticide products require that registrants develop refilling information and that refillers comply with certain conditions, including cleaning, inspecting, and labeling containers before refilling them. There are also recordkeeping requirements for both registrants and refillers, but swimming pool antimicrobials are exempt from some recordkeeping requirements.

Container-labeling regulations include requirements that all containers must be identifiable as nonrefillable or refillable except for those containing plant-incorporated protectants. Also required are statements prohibiting the reuse of nonrefillable container, and statements concerning recycling of nonrefillable containers. Labels must also include cleaning instructions for all refillable and some nonrefillable containers. Nonrefillable-container cleaning instructions will include instructions for triple-rinsing and can include the option of pressure-rinsing. Household pesticide products will be exempt from cleaning instruction requirements.

Container-structure regulations pertain to secondary containment structures (dikes) around stationary tanks if the container capacity is at least 500 gallons of liquid or 4,000 pounds of dry pesticide and held at the facility for at least 30 days. Dispensing areas must have a containment pad if refillable containers are emptied or cleaned, or if agricultural pesticides are dispensed from a stationary container, transport vehicle, or any other container to fill a refillable container. Pesticide dispensing areas must follow regulations for good operation procedures, monthly inspections of tanks and structures, and recordkeeping. There are provisions in these regulations for states with existing programs. These regulations pertain to retailers, custom blenders, and commercial applicators of agricultural pesticides only. They do not apply to farms. (Phil Nixon)

Recent Pesticide Applicator Manual Revisions

Grain Facility Pest Control (SP 39-8): This category study manual provides advanced information for persons wishing to become certified as Commercial Not-for-Hire Grain Facility Applicators, as well as Private Grain Fumigation Applicators. This revised manual features five in-depth chapters which address (1) general guidelines for stored-grain pest management; (2) insect identification, prevention, and detection; (3) controlling existing infestations of insects (including Fumigation Management Plan information); (4) managing storage fungi; and (5) managing vertebrate pests associated with grain storages. Revised in 2006 (56 pages).

Turfgrass (SP 39-2): This category study manual provides advanced information for persons wishing to become certified as Commercial, Commercial Not-for-Hire, or Public Turfgrass Pest Control Applicators. This revised manual features large photographs of grass species, IPM methods, diseases, and insect pests interspersed through the text, as well as new illustrations in the equipment and calibration chapter. There are new...
topics in the disease and the equipment and calibration chapters. Information is updated and revised throughout, with the revised manual being 15 pages longer than the previous edition.

To purchase these, or any other Pesticide Safety Education publications, contact your local University of Illinois Extension office, order online (www.PublicationsPlus.uiuc.edu), or call (800)345-6087.

**Commercial Pesticide Training Information Available**

It’s that time of year again—time to think about the expiration status of your Illinois Pesticide License. December 31 is the expiration date for Commercial, Commercial Not-for-Hire, Dealer, and Public licenses. The Illinois Department of Agriculture sends out both retest and renewal letters, typically in November. Your letter indicates your license status. However, you can check its status anytime by searching the Illinois Department of Agriculture Kelly Registration Pesticide Applicator Database at http://www.kellysolutions.com/IL/Applicators/index.asp. If you are new to this industry, you may need information on license requirements and testing and training options.

The Pesticide Safety Education Program at the University of Illinois has released its clinic dates for the 2006–2007 season. You can view the schedule and find related information at http://www.pesticidesafety.uiuc.edu/training/training.html. Schedule booklets can also be picked up at your local U of I Extension office or ordered by calling (800)644-2123 or (217)244-3469. The booklets contain order information for study materials, and an up-to-date list of materials can also be found online at http://www.pesticidesafety.uiuc.edu/publications/publications.htm.

How current are the study materials on your bookshelf? A lot can change in a 3-year test cycle. Just this year alone, the following publications were revised: general standards workbook, bilingual general standards workbook, turf manual, turf and ornamentals workbook, grain-facility pest control manual, and grain-facility and seed-treatment workbook. We anticipate that the finished publications will be available soon. Materials are revised from time to time, so checking this list prior to training or testing is recommended. (Michelle Wiesbrook)

**Upcoming U of I Educational Programs**

**Corn and Soybeans**

Online registration for the 2007 Illinois Crop Protection Technology Conference and the University of Illinois Corn & Soybean Classics is now available at www.ipm.uiuc.edu/conferences. Visit the site for full program details.

There will be no “keynote address” in the opening session of the conference in 2007. Instead, after a brief welcome, there will be a discussion about things that happened during the 2006 growing season and forecasts for the 2007 season. Each of the speakers will give a brief overview of the 2006 growing season regarding weather (Angel), crop production (Nafziger), weeds (Hager), soybean rust and other corn and soybean diseases (Bissonnette), nematodes (Niblack), and insects (Steffey). Ample time will be allowed for questions and answers, encouraging interaction between the speakers and audience.

Concurrent, issues-based symposia make up the conference during the afternoon of January 3 and the morning of January 4. Titles for the six symposia that will be offered follow.

**Wednesday, January 3**

- Opening Session (a.m.)—Lessons from a “Quiet” 2006 Season: What Lies Ahead?
- Symposium A (p.m.)—Healthy Plants: Is Your Disease Threshold Damaged?
- Symposium B (p.m.)—Seed and Soils: Some Basics of Crop Agronomics
- Symposium C (p.m.)—Wheat Management in Illinois

**Thursday, January 4**

- Symposium D (a.m.)—Seasons of Change (glyphosate-resistant weeds)
- Symposium E (a.m.)—Insect Management Issues: Did Events of 2006 Set Us Up for 2007?
- Symposium F (a.m.)—The Influence of Organic Markets and Urban Perspectives on Agrichemical Applications
- Closing Session (12:00 noon, light lunch served)—Strengthening the Partnership with the Illinois Agribusiness Community

The symposia are all repeated on the days indicated. The conference will close with a frank discussion about strengthening the partnership between the University of Illinois and the Illinois agribusiness community. Jean Payne (President, Illinois Fertilizer and Chemical Association) and Bob Hoef (Head, Department of Crop Sciences) will share some thoughts and ideas, but your feedback is strongly desired. Everyone is invited to attend this session before departing for home by 1:15 p.m.

This year marks the tenth year of the Corn & Soybean Classics. Here is what you can expect to hear:

- Changing Crop Demand: Implications for Prices, Production, and Policy (Darrel Good)
- The Truth About Continuous Corn (Emerson Nafziger)
- Farm-Level Changes Resulting from a Switch to More Corn (Gary Schnitkey)
• Fall-Applied MAP and DAP Nitrogen: How Much Is There Next Spring? (Fabián Fernandez)
• Resistance to SCN Resistance (Terry Niblack)
• Preparing for Soybean Aphids in 2007 (Kevin Steffey)
• Waterhemp—What Have We Learned? (Aaron Hager)
• The Fungi Among Us: Why the Rot, and Where’s the Rust? (Suzanne Bissonnette)
• Bt, ECB, ISTs, WCR, IRM, IPM: Sorting It All Out (Mike Gray)

Remember, the Classics will be held in the following cities on the following dates:
• January 16, Springfield
• January 17, Collinsville
• January 18, Mt. Vernon
• January 23, Bloomington
• January 24, Malta
• January 25, Moline

Fruits and Vegetables
Mark your calendars for these upcoming fruit and vegetable programs:

Southern Illinois Tree Fruit School
February 6, 2007
Holiday Inn
Mt. Vernon, Illinois
Contact: Elizabeth Wahle, (618)692-9434

Southwest Illinois Tree Fruit School
February 7, 2007
Hardin, Illinois
Contact: Elizabeth Wahle, (618)692-9434

Southern Illinois Vegetable School
February 15, 2007
Holiday Inn
Mt. Vernon, Illinois
Contact: Elizabeth Wahle, (618)692-9434

Illinois Small Fruit and Strawberry Schools
February 27 and 28, 2007
Holiday Inn
Mt. Vernon, Illinois
Contact: Bronwyn Aly, (618)695-2444

(Michelle Wiesbrook, article adapted from two original articles written by Kevin Steffey, which appeared in the November 3, 2006, issue of the Bulletin [www.ipm.uiuc.edu/bulletin], and an update on November 17, 2006. Fruit and vegetable program information from http://web.extension.uiuc.edu/regions/hort/.)

Final Rule on Pesticide Application to Water Bodies
In recent years, courts have been faced with the question of whether the Clean Water Act (CWA) requires a National Pollutant Discharge Elimination System (NPDES) permit for pesticide applications. As a result, public health authorities, natural resource managers, and others who rely on pesticides have expressed to EPA their concern and confusion about whether they have a legal obligation to obtain an NPDES permit under the CWA when pesticides are applied to or over waters of the United States.

The application of a pesticide to waters of the United States consistent with all relevant requirements under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) does not constitute the discharge of a pollutant that requires an NPDES permit in the following two circumstances:

1. The application of pesticides directly to waters to control pests. Examples of such applications include applications to control mosquito larvae, aquatic weeds, or other pests present in waters.
2. The application of pesticides to control pests present over waters, including near such waters, where a portion of the pesticides will unavoidably be deposited to waters to target the pests effectively: for example, when insecticides are aerially applied to a forest canopy where waters may be present below the canopy or when pesticides are applied over or near water for control of adult mosquitoes or other pests.

Residuals of applications within the scope of the two circumstances described in the rule are pollutants. However, NPDES permits are not required for an application that may leave residuals. This is because the pesticide is not a pollutant at the time of discharge and becomes a residual only after it has served its intended purpose.

This rule does not address pesticide spray drift. A work group of the Pesticide Program Dialogue Committee (PPDC), established under the Federal Advisory Committee Act (FACA), is investigating this issue and intends to provide advice to USEPA.

The entire rule and accompanying fact sheet can be found at www.epa.gov/npdes/agriculture. (Phil Nixon, from slightly modified USEPA fact sheet).

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Michelle L. Wiesbrook, Extension Specialist, Pesticide Application Training and Horticulture

The Illinois Pesticide Review is published six times a year on the Web at http://www.pesticidesafety.uiuc.edu/