COOPERATIVE EXTENSION
Washington State University

Agrichemical and Environmental News

A monthly report on pesticides and related environmental issues

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EPA Consumer Brochure

When the "Right to Know" Becomes the Right to Leak

Dr. Allan S. Felsot, Environmental Toxicologist, WSU

The phrase "Worker Right To Know" refers to a concept from the occupational safety field that workers should be apprised of the hazards of workplace chemicals to which they may be exposed. Subsequently, the concept was expanded to include the right of a community to know the chemical hazards to which they may be exposed. Now the idea that consumers should be informed about pesticide residues in their food comes home to roost as a small, almost overlooked part of the Food Quality Protection Act (FQPA). According to the FQPA section "Consumer Right To Know," the EPA would publish in an easy-to-understand format and distribute to large retail grocery stores for public display the following minimum information:

❶ A discussion of the risks and benefits of pesticide chemical residues in or on food;

❷ A list of tolerances issued for nonthreshold pesticides (formerly called carcinogenic pesticides) and foods on which they can occur;

❸ Recommendations to consumers for reducing dietary exposure to pesticides and maintaining a healthy diet.

Shh! It's A Secret

Congress gave EPA two years to develop and distribute a brochure containing this information, and the deadline passed August 1998. One reason for missing the deadline was the numerous objections to the first brochure, which had been released early in 1998 on the Internet. As a result, EPA returned to the drawing board and drafted a final copy. Instead of letting the world see what they were working on, they declared for the second go-round that all bets were final and no one would see the brochure until enough copies were printed and ready for release to the grocery chains. At the WSU sponsored FQPA Workshop in October, 1998, Steve Johnson, deputy director of the EPA Office of Pesticide Programs joked that the new brochure was under lock and key. Even the National Pesticide Telecommunications Network (NPTN), a pesticide information service run by Oregon State University under cooperative agreement with the EPA, was not allowed to have an

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… "Right to Know ," cont.

Dr. Allan S. Felsot, Environmental Toxicologist, WSU

advance copy. The NPTN director observed that his staff needed training to respond to the inevitable onslaught of questions that the brochure would generate.

Transparency Means Having Friends in High Places

Although EPA committed to being transparent (i.e., informative about details of its policies for risk assessment and implementing the FQPA), it inexplicably became very secretive about the second draft of the right-to-know brochure. But EPA must not be very good at keeping secrets. The cat was out of the bag when the headline, "EPA Dilutes Its Pamphlet on Pesticides," beamed from the December 30, 1998, issue of the *New York Times*. According to the article, Consumers Union (publishers of Consumer Reports) obtained the final draft of the brochure, apparently from someone in the EPA, and then passed it along to the newspaper. The *New York Times* article reviewed the differences between the second and first drafts of the brochure, and of course listed the negative criticisms voiced by the Consumers Union. Meanwhile, the NPTN administrator still had not been permitted to have a copy of the brochure.

Something's wrong when the "right to know" becomes the "right to release information only to your friends"…

Dilution Is the Solution to Word Pollution

Details about the new brochure were sketchy in the *New York Times*, but more tidbits can be found in a posting to the *PestLaw Online* web site discussion group (**http://www.pestlaw.com/Members/support/Forum1/HTML/000012.html)**. According to this posting, the first draft of the brochure was called *Pesticides on Food*, and now has been changed to *Pesticides and Food*.

Two of the most controversial items from the first draft seem to have been changed. In the first draft, EPA wrote, "Some pesticides have been shown to cause health problems such as birth defects, nerve damage, cancer and other toxic effects in laboratory animals." Now the wording has been changed to "While pesticides have important uses, studies show some pesticides cause health impacts at certain levels of exposure." The key phrase here is "at certain levels of exposure." While unprotected workers exposed to pesticides face increased hazards of harm, no study has shown any hazards to consumers exposed to pesticide residues in food. The question remains, will unsuspecting consumers realize that biological effects are related to dose and exposure levels?

Another item changed was the original suggestion to buy organic foods under "Tips to Reduce Pesticides on Foods." This has been removed and replaced by: "Your grocer may be able to provide you with information about food grown using fewer or no pesticides. These foods are often grown using IPM or organic practices. However, currently there are no national standards on these farming practices." The section title has been changed to "Healthy Sensible Food Practices," and recommends washing produce, peeling and trimming, and selecting a variety of foods.

The *New York Times* reported that neither industry nor the Consumers Union is completely happy about the way the brochure turned out. Personally, I'm not happy about the way the brochure was released. Looks like transparency means ignore university extension programs that have to respond to consumer calls and help your friends advertise their agenda in national newspapers. But don't tell anyone I said so. It's a secret.

Dr. Allan Felsot is an Environmental Toxicologist at WSU. He can be reached at (509) 372-7365 or ***afelsot@tricity.wsu.edu****.*

Around the Corner: Changes to C&T Programs?

Carol Ramsay, WSU Extension Pesticide Education Coordinator

Significant differences currently exist between the pesticide safety education, certification, and training programs ("C&T programs") in various states. Greater uniformity would allow increased reciprocity among states. All state programs must be consistent with the certification requirements of FIFRA and the federal certification rules (40 CFR Part 171), but while federal program regulations have not changed much since their inception twenty-five years ago, much has evolved in certification and applicator training programs at the state level. Toward the objective of greater uniformity, the Certification and Training Assessment Group (CTAG) was formed.

The Certification and Training Assessment Group, under the guidance of EPA, is given the task of:

◆ exploring recommendations from previous certification and training assessments,

◆ addressing the changing needs of pesticide safety education, training, and certification, and

◆ providing a direction for the future of pesticide safety education, training, and certification.

CTAG has representatives from EPA Office of Pesticide Programs, USDA Cooperative State Research Education & Extension Service, State Departments of Agriculture, American Association of Pesticide Safety Educators, Association of American Pesticide Control Officials, Association of Structural Pest Control Regulatory Officials, the Armed Forces Pest Management Board, EPA Regional Offices, and Native American Tribes.

In 1997, CTAG gathered information on the strengths and weaknesses of state and extension programs. In December 1997 and 1998, they met to discuss the findings. They developed and prioritized a set of recommendations based on this information, which are presented in a preliminary report, "Pesticide Safety for the 21st Century," scheduled to be released mid to late January of 1999 to stakeholders who have a role in state certification and training programs. The report's release and availability will be announced by this newsletter, e-mail, and federal register notice.

The purpose of the preliminary report is to provide recommendations (ideas) for improving the certification and training programs (especially from a federal perspective). CTAG wants stakeholders to carefully consider the report and provide frank and candid comments on the report's recommendations. CTAG will also solicit new ideas not contained in the report.

Once CTAG has received stakeholder comments in the spring of 1999, they will develop a final report and begin developing a strategic plan for implementation. This final report will be a blueprint for a package of recommended statute and regulatory changes and other program enhancements, which are deemed necessary to sustain the federal certification and training program and move it forward into the twenty-first century.

Washington State has been proactive in C&T program development. Many of the recommendations in the preliminary report have already been implemented in Washington. A few of the short-term federal recommendations will be readily implemented; some actions are already in progress.

Any recommendations that require a change to FIFRA or 40 CFR Part 171 will be the most contentious. Some changes may require legislative process in the states. Following are a few report recommendations that will generate comments on a national basis.

Expand scope of 25-year-old certification and training program to include public education and other applicators [revision of FIFRA and/or 40 CFR Part 171].

Most states' certification and training programs have changed significantly since inception of the federal program. Federal regulations only require certification for those who use restricted use products, not prod-

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… C&T Program Changes, cont.

Carol Ramsay, WSU Extension Pesticide Education Coordinator

ucts commercially or professionally applied. New federal regulations have continually been implemented requiring changes in both certification and training; however, the resources supporting the program have declined. The regulatory program needs expansion to recognize the ongoing regulatory changes and the higher competency standards for restricted use and professionally used pesticides. In addition, the federal program should address the current education needs of consumers, homeowners, and the general public with regards to risk mitigation for health (children and pets) and the environment. Certification should expand to include maintenance applicators, service technicians, and applicators of non-restricted use products if applied on a commercial/professional basis.

The impact of program expansion in Washington State would be minimal since our current state regulations require licensing of professional applicators, who are not covered in federal regulations. Program expansion to the consumers (funding for education) would be very beneficial in our large urban areas and would meet EPA's mandate for protecting human health and the environment.

Implement a new tiered system of "certified applicators" with corresponding required levels of training [revision of FIFRA and 40 CFR Part 171] and implement a new restrictive classification system for products.

This recommends creation of a new system for certified applicators depending on product hazard (health and environment), applicator exposure, and other human exposures. Products would be classified by a new system, expanding the current restricted and general use categories to include some new, more restrictive levels. A tiered certified applicator system affords the potential for the "most educated" applicator to apply a "more hazardous" product in a safe manner, thus allowing the product to stay on the market. It may also require certification of professional applicators, who currently are not required to be certified. Different levels of training/education would be required dependent on the tier level of certification. For argument sake let's look at four levels: Certified Pest Manager, Certified Professional Applicator, Certified Service Technician/Handler, and Certified Home User (for products currently not available to home users; home use products would most likely be classified differently under a new classification scheme).

Impacts to Washington State could be significant. Depending on how the tiered system and product classifications were designed, it could mean agricultural pesticide handlers would require certification, not just training as required by Worker Protection Standards. A new product classification system could potentially save some uses of products applied to our minor crops because they would only be used by someone certified at one of the higher tier levels.

Require examinations for all certified (including private) applicators. [Some states' laws currently do not allow examination. Requires a revision of FIFRA and 40 CFR Part 171].

Due to current language in FIFRA and 40 CFR Part 171 and some states' rules, private applicators are not tested on their competency of pesticide laws, safety, and application principles. These states' requirements for certification may include a home study book or a training session. Representatives from several states do not believe they can change their state rules to require testing unless FIFRA is changed.

Because WSDA has required private applicators to take a written exam since 1989, this change would have no effect in Washington.

Increase funding by establishing a fee on pesticide registrations.

To increase the scope of the program or at least to support the current program more fully, additional funding is needed. Registrants benefit greatly from certification and training programs. The CTAG preliminary report suggests increasing product registra-

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… C&T Program Changes, cont.

Carol Ramsay, WSU Extension Pesticide Education Coordinator

tion fees and directing that money toward certification and training. (Other sources for increased support are also discussed.)

In Washington, current federal support accounts for less than 1% of university-sponsored training programs and less than 5% of the state certification program. No product registration fees are directed to either program. The state certification program is funded primarily by license fees and the university training programs are funded primarily by user fees.

Carol's Crystal Ball

I doubt stakeholders will support opening FIFRA to alleviate the weaknesses in certification and training, especially with the recent passage of FQPA. The most likely outcomes are that easy-to-implement changes with low input costs will be recommended and supported, awareness for consumer and home user education will increase, and some low level of new support will be endorsed.

If you have any questions regarding the preliminary report or the CTAG effort in general, you may contact Carol Ramsay, WSU Extension Pesticide Education Coordinator, at ***ramsay@wsu.edu*** *or (509) 335-9222; Kevin Keaney or Jeanne Heying, EPA Certification and Worker Protection Branch, (703) 305-7066; or Dr. John Impson, USDA Cooperative State Research Education & Extension Service, (202) 401-4201.*

Pesticide Training Courses Scheduled

Pesticide pre-licensing and recertification courses will be conducted on the following dates. The registration fee for either type of course is $30 per day early (postmarked 14 days prior to the program), otherwise $45 per day. For information contact: Cooperative Extension Conferences: (509) 335-2830 or pest@cahe.wsu.edu. Information is also available on-line at http://pep.wsu.edu. WSU Recertification Courses offer 6 credits per day.

1999 Recertification Programs

EASTERN WASHINGTON		WESTERN WASHINGTON	
Pullman	Feb. 3–4	Olympia	Feb. 1–2
Wenatchee	Feb. 17–18	Highline	Feb. 4–5
Spokane*	Feb. 19	Mt. Vernon	Feb. 10–11
*agricultural		Tacoma	Feb. 24–25
		Seattle	Mar. 4–5

New Dealer/Manager Training Programs Recognized in 1998 by Governor Gary Locke
1999 Dealer/Manager Programs

Richland	Feb. 22	Wenatchee	Feb. 24
Yakima	Feb. 23	Spokane	Feb. 25

Washington State University annually conducts pre-license training for pesticide applicators, consultants, and dealers. Washington State Department of Agriculture offers all exam categories at the end of the training. Anyone preparing for pesticide licensing exams will benefit from the training programs offered; however, this training will be most useful to those preparing for the following license exams: Weed Control (Agriculture, Turf & Ornamental, Rights-of-way), Private Applicator Exam, Insect and Disease Control (Agriculture,Turf & Ornamental), Dealer Manager Exam, and Laws & Safety.

1999 Pre-License Programs

EASTERN WASHINGTON		WESTERN WASHINGTON	
Pullman	Feb. 2–4	Mt. Vernon	Feb. 9–11
Wenatchee	Feb. 16–18	Tacoma	Feb. 23–25
		Puyallup	Mar. 23–25

1999 Specialty Workshop

Landscape Insects	Bellingham	March 12

No Detected Pesticide Residues®

Dr. Carol Weisskopf, Analytical Chemist, WSU

Dear Aggie threw down the NutriClean® gauntlet in the January 1999 issue of the *AENews*, and I felt compelled to pick it up. NutriClean®, based in Oakland, California, administers a program to certify produce which meets their "no detected pesticide residues®" standard of 0.05 ppm. NutriClean®-certified produce is carried locally at Fred Meyer stores.

Where Do You Want to Go Today?®

I don't usually shop at Fred Meyer, so I was unaware of their NutriClean®-certified produce until a WSU Food & Environmental Quality Lab graduate student mentioned making produce purchasing decisions based on NutriClean® certification. Then I found that Raley's supermarket chain in Sacramento, California, which has served my family for four generations, stocks and advertises NutriClean®-tested produce.

Recently, I was looking for fruit with low organophosphate pesticide residue levels for use in analytical method testing for a current project. In testing of methods, we fortify representative commodities with the pesticides of interest to determine our ability to recover the analytes from the sample. It is easiest if the samples contain no detected pesticide residues® of the compounds, as it simplifies the calculations. I decided to take a look at NutriClean®-certified produce, since it seemed convenient to let someone else do some of the work. I also wanted to check out the NutriClean® consumer brochure.

Taste the Difference Fresh Makes™

The first thing I discovered on my shopping expedition was that if I limited my fruit and vegetable consumption to locally available NutriClean® certified produce only, I would have a strange diet indeed. It would consist of carrots, potatoes, bulb onions, lettuce, green onions, and kiwi. Although the salads would be fine, kiwi could get a little pricey for my fruit of the day. The fruits we needed for method testing were not certified, but I picked up three types of leaf lettuce, carrots, and kiwi (as well as the brochure) out of curiosity.

Our study focuses on twelve widely used organophosphate insecticides, and our detection limits are 0.005 to 0.0003 ppm, depending on the pesticide and sample. NutriClean®'s detection limits at 0.05 ppm are consistent with rapid screening techniques; ours are lower, in the range of those used in the USDA Pesticide Data Program. When the NutriClean® analyses were completed, we had a detection in the kiwi: chlorpyrifos at 0.002 ppm, which has a tolerance of 2 ppm. No detected pesticide residues® of organophosphates were found in the vegetables. The NutriClean® samples all met their 0.05 ppm certification level.

The NutriClean® sample size was neither large nor statistically valid, and we were testing for only twelve compounds. Although it would have been good sport to have found otherwise, indications are that NutriClean® is delivering what they promise: produce with pesticides below a 0.05 ppm detection limit.

Have It Your Way®

The limited testing we performed, as well as the information available in their brochure and on their web site (**http://www.scs.com**) indicate that NutriClean® is doing a thorough and accurate job filling the marketing niche created by the current attitude towards pesticides.

NutriClean® bases the need for their service, and the reason shoppers should select certified produce, on two issues: environmental impact and food safety. Both are discussed in their brochure carried at Fred Meyer. Raley's has their own brochure, which focuses primarily on the testing as a means to avoid produce which is over tolerance. Both brochures state that the testing is a supplement to government programs, but the brochures vary in their approach.

NutriClean®'s stated goal is to "purchase produce directly from those farmers who show a consistent ability to outperform government pesticide residue standards and are committed to reducing pesticide use in their fields." The produce is then distributed to

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…No Detected Pesticide Residues®, cont.

Dr. Carol Weisskopf, Analytical Chemist, WSU

participating markets. Since the USDA Pesticide Data Program indicates that fewer than one in 500 produce samples contain residues above established tolerances, the first half of NutriClean®'s goal is nearly universally met. The second half of their goal appears to be evaluated via their 0.05 ppm detection criteria, limiting produce purchases to farmers and suppliers consistently meeting this limit.

Where's the Beef?™

Unfortunately, selecting or certifying produce according to detection limits still uncouples levels of concern from toxicological or environmental criteria. Many chemicals have quite high tolerances, such as the fungicide iprodione on grapes, at 60 ppm. Many pesticide tolerances are in the 0.05 - 0.1 ppm range. Some pesticide tolerances are particularly low: the insecticide methomyl on carrots or the fungicide thiabendazole on sweet potatoes, both with tolerances of 0.02 ppm. Environmental criteria, such as water quality standards, are equally variable. If NutriClean® detected 0.06 ppm iprodione on grapes, the sample would fail the certification criteria even with a pesticide level only 1/1000 of the tolerance. Either methomyl on carrots or thiabendazole on sweet potatoes could be present at 0.04 ppm and be certified, even though each would be in violation containing residues at twice the tolerance.

"…tolerances, rather than detection limits, are the best measure of food safety."

Tolerance enforcement analyses have varying demands depending on the chemical and commodity, and thus do not lend themselves to a tidy one-size-fits-all detection limit. Granted, it would be difficult for consumers to make sense of a brochure containing a full reporting of detection limits in relation to tolerances. A testing laboratory could, however, certify that produce falls below a given percentage of tolerance. One could market produce that met criteria "10 times stricter than government standards" and analyze iprodione on grapes at 6 ppm and methomyl on carrots at 0.002 ppm for certification. This would certainly be more challenging analytically, but would provide a level playing field for compounds of varying toxicity.

Personal Choice™

NutriClean® brochure: "Chemical manufacturers and some farm organizations feel that dietary dangers from pesticides have been exaggerated, while some consumer groups and scientists feel that the danger has been understated. We do not know who is right or wrong on this issue. . . . In the meantime, we prefer to be on the side of safety."

Raley's brochure: "Chemical manufacturers and some farm organizations feel the dietary dangers from pesticides have been exaggerated, while consumer groups and other scientists feel the danger has been understated. We do not know who is right or wrong on the issue. . . . In the meantime, we are testing produce items to be sure pesticide residues are within government approved tolerance levels."

I occasionally imagine that I am a scientist. I believe that tolerances are at protective levels, and appreciate government and private programs which ensure residues in my produce are almost always below tolerance. I also believe tolerances, rather than detection limits, are the best measure of food safety. The pesticide residue levels actually encountered in produce are sufficiently low that they are not of concern to me, and I do not make produce selections based on residue claims. I'm glad Raley's chose to go with their own brochure, as I prefer their approach to informing the customer.

Dr. Carol Weisskopf, a WSU Analytical Chemist, can be reached at ***cpw@owt.com*** *or (509) 372-7464.*

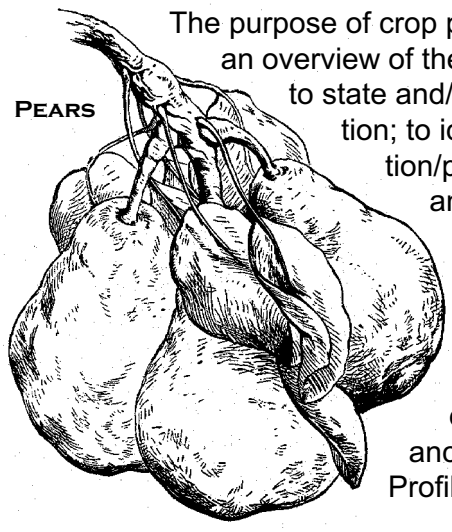
Crop Profiles:
What they are, why they are important

Dr. Catherine Daniels, Pesticide Coordinator, WSU

In 1998, the US Department of Agriculture's Office of Pest Management Policy (USDA/OPMP) requested "Commodity and Pest Management Profiles" for the important crops in each state. This request came in response to the Food Quality Protection Act (FQPA) mandate that USDA and the Environmental Protection Agency (EPA) obtain pesticide use data for the nation's major and minor crops in the course of reassessing tolerances.

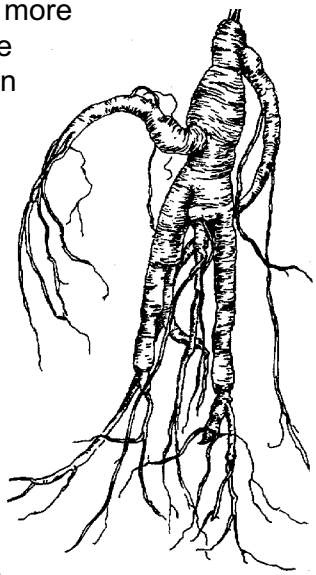
What Is a Crop Profile?

A Commodity and Pest Management Profile, also known as a "crop profile," is a condensed production story of an individual agricultural commodity for a given state or region. Profiles include basic production statistics (national ranking, percent of U.S. production, total acres, etc.); typical cultural practices (soil types, irrigation, timing, planting and harvesting techniques, etc.); insect/mite, weed, and disease problems (damage from various pests, percent of acres infested, yield loss, etc.); typical control measures (chemicals used, type of application, timing, etc.); and more. They also address whether Integrated Pest Management (IPM) or resistance management programs are in place or under consideration, and discuss alternative strategies including cultural and biological controls.



PEARS

The purpose of crop profiles is to provide an overview of the crops' importance to state and/or national production; to identify crop production/protection issues; and to suggest pest management alternatives, research needs, and opportunities for risk mitigation during the tolerance review process. Profiles provide a "big picture" view of how a particular chemical is integrated within a comprehensive crop protection program. Consequences of removal of that chemical, or of changes to its use pattern (referred to as "risk mitigation"), can be more readily determined when the chemical's use is explored in context.



GINSENG

How Will Crop Profiles Be Used?

Besides assisting the USDA and EPA in reassessing tolerances, crop profiles will assist university and Interregional Research Project No. 4 (IR-4) personnel in quickly identifying research needs once a tolerance is revoked or lowered. What if the chemical "has to go," but is the only control for a production-crippling pest? That's when researchers go to work on a substitute strategy, armed with the crop profiles relating to the crop(s) and chemical(s) in question. USDA has pledged to work with the affected industry, crop production experts, and EPA in developing transition strategies so that catastrophic losses don't occur and the affected industry remains viable (see related article "FQPA: A USDA Perspective," in *AENews* No. 152, December 1998).

While the immediate request for crop profiles comes from USDA/OPMP for the purpose of assisting in tolerance reassessment, profiles of crops not subject to tolerances will prove useful as well. For one thing, crops not subject to tolerances (e.g., Christmas trees; seed, nursery, and landscape crops) may utilize some of the same pest-control agents as crops subject to tolerances, so the non-tolerance crop's profile will help provide a more complete context for studying the pesticide's use.

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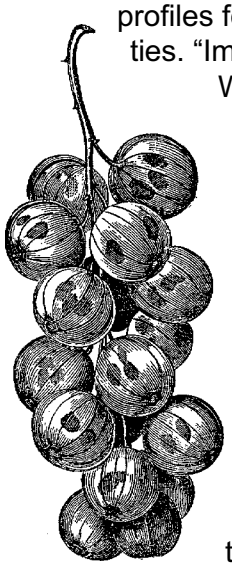
…Crop Profiles, cont.

Dr. Catherine Daniels, Pesticide Coordinator, WSU

Besides assisting in the immediate process of tolerance reassessment, crop profiles will benefit agriculture in many ways over the long term.

The profiles can play a role in shaping market forces. What if, for example, an important but small-acreage crop's only viable pesticide was also used on a large-acreage crop, and the latter's use was discontinued? The manufacturer of the pesticide might find that production of the agent was no longer profitable, and could discontinue it, resulting in devastation for the small-acreage crop. With crop profiles in place for all important commodities, such disasters could be forestalled.

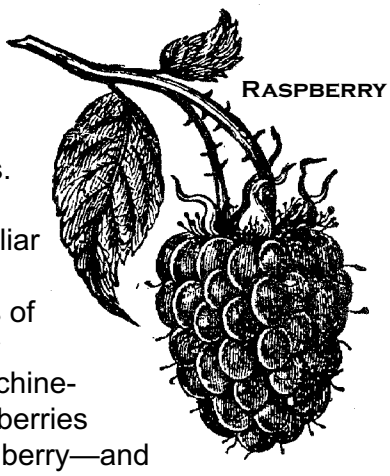
Which Crops Should Be Profiled?



CURRANTS

Every state has been instructed to compile profiles for each of its important commodities. "Important," however, is undefined. Washington, a major producer of minor crops, is preparing profiles on a number of crops we find extremely important for a variety of reasons, including their role in worldwide production and their potential effect on other crops. (For example, beet seed production uses only 1000 acres of Washington's agricultural lands, but these thousand acres represent a whopping 95% of U.S. beet seed production, and 50% of the world's beet seed.) Minor crops are also valuable in their contribution to ecosystem diversity.

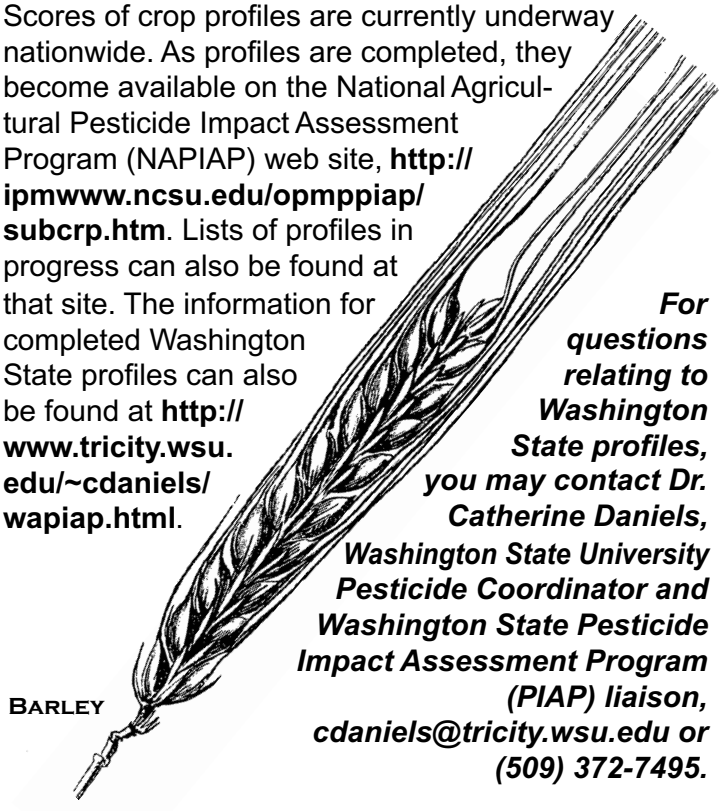
The information in crop profiles has already proven valuable in Washington State as a reference for, among others, state legislators, Washington State Department of Agriculture personnel, and university specialists. The process of compiling a profile serves each industry by identifying and enumerating pest control needs, putting those needs in a clear context, and setting the stage for determining future research priorities. In reading a thorough profile, someone unfamiliar with crop specifics can understand the nuances of that particular crop. (For example, the typical machine-harvest method for raspberries essentially "shakes" the berry—and whatever insect passengers the berry is hosting—onto a receiving surface. Industry-wide hand-harvest or hand-sorting is cost-prohibitive, and the geometry of a raspberry can hide a multitude of sins, so a pest-free berry is essential.)



RASPBERRY

Where Can I See Completed Profiles?

Scores of crop profiles are currently underway nationwide. As profiles are completed, they become available on the National Agricultural Pesticide Impact Assessment Program (NAPIAP) web site, **http://ipmwww.ncsu.edu/opmppiap/subcrp.htm**. Lists of profiles in progress can also be found at that site. The information for completed Washington State profiles can also be found at **http://www.tricity.wsu.edu/~cdaniels/wapiap.html**.



BARLEY

For questions relating to Washington State profiles, you may contact Dr. Catherine Daniels, Washington State University Pesticide Coordinator and Washington State Pesticide Impact Assessment Program (PIAP) liaison, cdaniels@tricity.wsu.edu or (509) 372-7495.

Icons Help Determine More Accurate Worker History

New interview methods may pave the way for better chronic exposure assessments

Norm Herdrich, Pacific Northwest Agricultural Safety and Health Center

Assessing lifetime exposure of farm laborers to pesticides is a difficult and complex proposition. Unknown variables exist in almost every part of the equation. One important aspect of chronic (long-term) exposure is work history, but compiling an accurate picture of a transient worker's employment history is difficult. A refinement in interviewing techniques—tying employment history with life events by use of pictures on a calendar—may help, according to a recent study by the Pacific Northwest Agricultural Safety and Health Center (PNASH).

Assessing Pesticide Exposure

Pesticide exposure is a function of:

A environmental concentration (what agents are present, and in what quantity?)

and

B subject activity (what was the subject doing while in the exposure environment, and what was the duration of the activity?)

By tracking a subject's career history, researchers can discern the subject's activities in relation to agrichemicals, as well as the duration of the subject's exposure—part B of the exposure equation. Daily average and lifetime exposures can then be extrapolated and compared to "No Observable Effect Levels" (NOELs) and Environmental Protection Agency (EPA) reference doses (RfDs).

Determining Work History

Personnel and employment records are common means of determining worker histories, but such documents may not exist for transient workers such as farm laborers. When this is the case, the only alternative may be work histories related by the workers themselves. But workers may have several employers and perform a wide variety of tasks during a work year, which can lead to confusion and inaccurate reporting. The potential for inaccuracy increases when workers are asked to recall employment over an extended period of time, or when the interviewer and interviewee have different native languages, or when the worker is illiterate or semi-literate.

Icons and Calendars as Memory Aids

To help in solving the problems inherent in reporting employment histories, PNASH researchers investigated the use of memory aids. A calendar was used to provide a visual format spanning the years of the subject's employment history. An interview began with the subject providing the month and year of important life events: births, deaths, marriages, geographic relocations, injuries, illnesses, etc. The interviewer placed an icon such as a small toy or self-sticking picture on each important date. The life events, thus visually represented, would now serve as chronological anchors around which subjects can more easily recall their work history.

Next, the subject was asked a series of detailed questions concerning his or her entire work history, starting with the present and moving backward. The interviewer recorded information on the calendar by drawing a line between the starting and ending dates of each job, using different colors and visual icons for different job types. The interviewer aided the subject's recall by referring to the life event icons already placed on the calendar.

Results and Observations

The PNASH study compared work histories collected using icon-calendar memory aids with those collected via a traditional questionnaire for a group of farm workers and a group of non-farm workers. Analysis of the data collected shows the icon-calendar interview system performed much better than the traditional questionnaire in terms of number of jobs reported in a subject's job history. Median total job count reported

The icon-calendar system provided a far more detailed and complete picture of work history…

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…Icons and Worker History, cont.

Norm Herdrich, Pacific Northwest Agricultural Safety and Health Center

by subjects was 23 using the icon-calendar questionnaire, compared to 9 with the traditional questionnaire. The amount of time accounted for was also much greater with the icon-calendar questionnaire than with the traditional method. This was true for both duration of work history and for the percentage of time explained by employment. The researchers found the percentage of missing time on the icon-calendar questionnaire was very low, never going above 2.4%, while the percentage of missing time on the traditional questionnaire was quite high, ranging from 22.1% to 100% in the most recent and most distant time periods, respectively. Jobs reported via the icon-calendar questionnaire were also more likely to have sufficient starting and ending date information than were those in the traditional questionnaire.

Similar patterns were found when analyses were restricted to agricultural job counts and durations, and when analyses were stratified by gender.

The objective of the study was to compare the occupational histories collected using the two methods: icon-calendar interview system vs. traditional questionnaire. The study did not attempt to measure the validity or reliability of the data, just the quantity of information and completeness of work history.

The icon-calendar questionnaire provided a far more detailed and complete picture of a subject's occupational history. It provided greater detail in both numbers of jobs and time spent on individual jobs. This difference was more pronounced the further back in a subject's employment history the interviewer went.

On another note, the interviewers found the subjects interviewed using the icon-calendar questionnaire to be much more patient and cooperative. Farm workers interviewed using the traditional method appeared to have a great deal of difficulty recalling details, tending to become frustrated and impatient. This was not the case where the icon-calendar questionnaire was used. In fact, the researchers reported study subjects "seemed to be intrigued by seeing their lives literally drawn in front of them."

a cooperative and engaged subject will provide better information than one who is irritated and confused…

"It is likely that a cooperative and engaged subject will provide better information than one who is irritated and confused," researchers added. Indeed, the subjects were often concerned about the accuracy of the completed calendar, reviewing and correcting details. "They often asked for a copy of the completed work-life calendar to take with them. Based on this behavior, we submit that the easily interpretable graphical portrayal of their personal and work lives elicited a commitment to accuracy and completeness on the part of the subject."

The Pacific Northwest Agricultural Safety and Health Center, funded by NIOSH, is one of eight such centers in the United States. The Center's mandate is to study occupational health and safety issues in farming, forestry and fishing in the four Region X states of Idaho, Washington, Oregon and Alaska. Dr. Richard Fenske is the Center Director, Dr. Matthew Keifer is Co-Director, and Sharon Morris is Associate Director. Adrienne Hidy is the Center's Administrator.

This article was prepared by Norm Herdrich, PNASH Outreach Coordinator. To obtain additional information, contact him at ***normh@u.washington.edu*** *or (509) 926-1704.*

The researchers involved in this study were:
Lawrence S. Engel, Department of Epidemiology, University of Washington
Matthew Keifer, Occupational Medicine Program, Departments of Medicine and Environmental Health, UW, and co-director of PNASH
Shelia H. Zahm, Occupational Epidemiology Branch, National Cancer Institute, Rockville, MD.

FEQL Advisory Board Meeting

December 16, 1998

Dr. Carol Weisskopf, Analytical Chemist, WSU

The second Food & Environmental Quality Lab (FEQL) Advisory Board meeting took place December 16, 1998. Only about half the board members were in attendance. While such a small meeting led to a high degree of interaction, all were disappointed in the low turnout. On the bright side, an agenda that initially appeared as dry as dust engendered lively discussion. The result was a meeting that proved both enlightening and productive.

At the first advisory board meeting (held September 22, 1998, and written up in *AENews* November 1998, Issue No. 151, page 6) a question was raised regarding education programs for applicators and farm laborers. For the December meeting, Carol Ramsay, coordinator of the WSU Pesticide Education Program (PEP), came down from the Pullman campus to provide the board and FEQL personnel with an overview of PEP activities. After impressing all attendees with the wealth of information and educational opportunities offered by her program, Carol launched into a description of pending improvements and future program goals. Advisory board members considered integration of the Pesticide Education Program and the Pesticide Information Center web sites advantageous, and offered suggestions for potential additions to the material offered on the site.

Issues discussed at this productive meeting included outreach activities, visibility, student recruitment, and financial and facility constraints.

FEQL interactions with state agencies, commodity groups, the Interregional Research Project No. 4 (IR-4) program, and entities in Oregon and Idaho were also covered. The IR-4 program generated the most discussion, as the advisory board membership includes representatives of affected commodity groups and IR-4 researchers from Oregon and Idaho. In the past, IR-4 funding has been equally divided among regions, regardless of the proportion of lab or field studies each region performed. This funding frequently fails to cover all costs of field or lab work, with participating universities or research programs covering the shortfall. With increasing financial constraints, universities have been less enthusiastic about covering these costs. The Western Region, with its higher productivity but equivalent financial support, is particularly burdened. Changes in IR-4 funding apportionment have been discussed at national meetings, and are expected to take place. The board advised coordination of Pacific Northwest researchers in presenting program concerns.

The complex issues of outreach activities, FEQL's visibility to constituents, student recruitment, and financial and facility constraints were all on this meeting's agenda, were all discussed, and will all undoubtedly reappear in some guise on subsequent agendas as FEQL develops. In general, the consensus seems to be that we are doing OK.

As far as visibility, one of our most obvious avenues is this newsletter, *Agrichemical and Environmental News*. We have now produced one full year under new editorial direction, and have been assessing newsletter content, length, and distribution. The newsletter is not, however, an effective tool for reaching groups such as the farm labor community, nor has it addressed many urban pesticide issues; each of these concerns is addressed by other cooperative extension outreach programs.

Visibility is also tied into the area of graduate student recruitment; we can't recruit students who don't know about us. A significant hindrance to attracting graduate students is the lack of state funding for graduate research assistants. Our graduate students are paid entirely from grant funds, which puts us at a financial disadvantage in comparison to faculty with traditional department-based programs. In addition, it is not appropriate to support students on grant funds while they undergo the year of Pullman campus residency required of Ph.D. students.

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…FEQL Advisory Board Meeting, cont.

Dr. Carol Weisskopf, Analytical Chemist, WSU

Finally, space and money are both tight and likely to remain tight, but both are tolerable. Detailed income sources and expenditure categories were presented to board members. The board emphasized that we consider all costs when determining funding requests, and agreed that we needed to consider funding sources for eventual equipment replacement.

This advisory board meeting was considerably more relaxed and enjoyable than the first one, since it didn't have that "blind date" quality. The board continues to impress us with their interest in the program and their insights into our operations. I doubt that board members spend valuable time at our meetings due entirely to the quality of the refreshments we feed them (although we did have some killer donuts at this one, not to mention a respectable lunch and premium Northwest coffee). We sincerely appreciate members' time, and look forward to the next meeting.

Dr. Carol Weisskopf is Laboratory Research Director for the lab facility at the WSU FEQL.

Metalaxyl Minutiae

Jane M. Thomas, Pesticide Notification Network Coordinator, WSU

While entering data into the Pesticide Information Center On-Line (PICOL) label database (see URL **http://picol.cahe.wsu.edu**) recently, I became aware that we were using two ingredient codes for metalaxyl. I assumed that we had a major problem with the database, so I started doing a bit of looking and found a source that actually listed *three* separate metalaxyl's: the R-isomer (CAS# 701630-17-0), the S-isomer (CAS# 69516-34-3), and mixed isomers (CAS# 57837-19-1). Next I pulled some labels and found that some listed simply "metalaxyl" while others gave the active ingredient as "metalaxyl-R." Now I was really confused. Could it really be that some products are made with one specific isomer? This just didn't seem practical.

I contacted Dr. Lee Hubbard, Senior Regulatory Manager for Novartis. Dr. Hubbard explained that when a label lists the active ingredient as simply "metalaxyl," the pesticide is made up of mixed isomers (properly referred to as enantiomers), approximately 50% each of the R- and S-isomers. Many years ago it was discovered that the R-isomer (referred to in the biz as mefenoxam) was considerably more active that the S-isomer. It wasn't until a few years ago, however, that a practical production-scale method of making the R-isomer became available.

In the case of Novartis products, the Ridomil fungicides contain the standard (approximately 50-50) mixed isomers as their active ingredient, while the Ridomil Gold line contains approximately 97% R-isomer. No products contain the S-isomer alone, because this chemical has essentially no biological activity as a fungicide.

Because the R-isomer contains essentially all the biological activity, it can provide the same disease control as the mixed isomer metalaxyl, at half the application rate. Using products containing a preponderance of the R-isomer results in reduced exposure to humans and the environment while maintaining the same level of disease control.

So, in the end, I cleaned up the database, changed the names of the ingredients to make them properly descriptive, and learned some fascinating metalaxyl minutiae.

Jane M. Thomas is the Pesticide Notification Network (PNN) Coordinator for the Pesticide Information Center (PIC) at WSU. For more adventures in trivia, call (509) 372-7493 or e-mail ***jmthomas@tricity.wsu.edu****.*

Section 18's: What Are They Worth?

Jane M. Thomas, Pesticide Notification Network Coordinator, WSU

Section 18 of the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) provides for temporary exemption of a pesticide from the full requirement of registration in the case of emergency circumstances. The task of filing for a Section 18 exemption takes time—is it worth it? WSU's Pesticide Information Center recently reviewed 1998 Section 18 requests to estimate their dollar value in Washington State.

Section 18 exemptions fall into two categories: specific and crisis. In 1998, the specific exemptions granted by EPA were projected to be worth more than $391.4 million to Washington agriculture. The 1998 crisis exemptions issued by WSDA were expected to be worth a minimum of $51.8 million to growers. Thus, the total value of all the Section 18s granted in Washington was over $443 million for 1998 alone.

These figures are made up of both avoided crop losses and savings associated with not having to replant or rehabilitate acreage in cases of severe pest infestation. The numbers represent net revenues or farm gate values as opposed to gross revenues.

Please note however that the true value of Section 18s is likely much higher. The numbers that went into the above calculations are from only twenty-six of the thirty specific exemptions granted in Washington, and eight of nine crisis exemptions. Numbers for individual Section 18s are missing for various reasons. In some cases Washington asked to be added to a regional Section 18 request and a complete request package was not available. In other cases, specific economic data was not provided or was given in a format not conducive to producing a single number for inclusion here. Finally, some numbers were omitted because our office did not have copies of the Section 18 request on hand to review. The specific exemptions missing from these figures are the regional exemptions for tebuconazole on barley and paraquat dichloride on peas, and the exemptions for chlorine dioxide on stored potatoes and sulfosulfuron on wheat. The crisis exemption that was omitted was issued for the use of oxyfluorfen on perennial rye grass seed.

While it is time-consuming to process a Section 18 request, when you compare the effort required to the potential savings to Washington agriculture, it seems a good trade-off.

Jane M. Thomas is the Pesticide Notification Network (PNN) Coordinator for the Pesticide Information Center (PIC) at WSU. She can be reached at (509) 372-7493 or ***jmthomas@tricity.wsu.edu****.*

Dear Aggie

Providing answers to the questions you didn't know you wanted to ask

In contrast to the usually more sober contributors to the Agrichemical and Environmental News*, Dear Aggie deals lightheartedly with the peculiarities that cross our paths and helps decipher the enigmatic and clarify the obscure. Questions may be e-mailed to Dear Aggie at* ***dearaggy@tricity.wsu.edu****. Opinions are Aggie's and do not reflect those of WSU.*

Dear Aggie: A few nights ago, as a bit of bedtime reading, I ran across the following news item in the Federal Register. (In case you are wondering, yes, it is a terrific sleeping aid.) EPA has determined that all residues of edible food commodities are exempt from the requirement for a tolerance when used as a pesticide except peanuts, tree nuts, milk, soybeans, eggs, fish, crustacea, and wheat. Aggie, what is with this list? Milk— the most basic source of protein for humans, the very sustenance of our young. And wheat—the basis for the bread of life. What could be so terribly wrong with these things that they would need a tolerance to be applied to crops? Now soybeans I understand. They are, after all, solely responsible for tofu and everyone knows that tofu is odious. I can see that spewing tofu juice onto, say, asparagus might be cause for concern. Perhaps it is a good idea to establish a tofu tolerance…or

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… Dear Aggie, cont.

perhaps a nationwide tofu ban ("The 1999 Tofu Taboo"). But, I digress… Seriously Aggie, what could these seemingly disparate items have in common to cause EPA to establish a tolerance for those who want to grind them up and apply them to a crop? Please answer soon. This is keeping me awake nights.

Dear Unsnoozed, Tofu-ed, and Confused: According to Dr. Carol Weisskopf, each of the items listed is a significant allergen. (Source: 12/4/98 Federal Register page 66999.) We can't go spewing allergens about, now, can we? Keep this in mind if you find yourself heading toward the garden with a wheelbarrow full of Dungeness crabs. And, by the way, see what you can do about your choice in bedtime reading—studies show that a proclivity for slipping between the sheets with the Federal Register can be bad for the social life.

Dear Aggie: Under the FQPA, reduced risk pesticides are supposed to be placed on the fast track to registration. Some of these candidates are microorganisms like the famous Bt. Considering all the stories about food safety and pathogenic microorganisms, do any of these biopesticides have hidden side effects that might adversely affect human health?

Dear Microorganism Muser: You are correct that biopesticides made from microorganisms will be big winners under the FQPA. Many of these will be certified for organic agriculture. The common perception is these materials are very safe for humans and the environment. Aggie thinks biopesticides—including *Bacillus thuringiensis,* or "Bt"—will definitely have a place in the future of pest control, but she is not so naïve as to think it will be a free ride. "Adverse effects on human health" is a broad category, taking more than toxicology into consideration. Scientists from the University of North Carolina and the EPA recently reported on the allergenic potential of the fungus *Metarhizium anisopliae* (don't ask how to pronounce it; Aggie flunked Latin), which is the "active ingredient" in BIO-PATH, registered for cockroach control, and BIOBLAST, registered for termite control. The fungus was cultured and then prepared for exposure to mice via an inhalation route or via injection into the body cavity. The mice exhibited immune and pulmonary inflammatory responses that were characteristic of allergy. Ironically, cockroaches have been associated with allergic reactions, especially asthma, and BIO-PATH may be one of the products that some people would like to see replace home use of the OP insecticides. Aggie's not really worried yet, but let's keep that big can of RAID handy just in case. (Source: Ward et al., 1998, Toxicological Sciences, vol. 45, p. 195)

Dear Aggie: In a previous issue of AENews, Dr. Felsot pointed out that bacterial contamination of water supplies may be a bigger health problem to infants than nitrates. The Yakima River has been said to sometimes receive waste lagoon overflow from livestock operations. Is it possible for scientists to pinpoint the exact sources of bacterial contamination?

Dear Wastewater Worrier: Fecal impairment of streams with pathogenic bacteria like *E. coli* is considered a big problem in areas of intensive livestock production. However, other sources of fecal bacteria, for example septic systems, could be a problem so it is important to correctly identify the contamination source to ensure proper protection of water quality. Environmental microbiologists have come to the rescue using DNA fingerprinting. A University of Washington professor has fingerprinted different strains of *E. coli*. Different kinds of animals harbor unique strains of *E. coli*. The technique, known as microbial source tracking, was actually used during the summer clean-up of Juanita Beach on Lake Washington near Seattle. High bacterial counts closed the beach and no one knew whether the source was from a sewage pipe leak, failed septic systems, or animal droppings. The DNA fingerprinting technique revealed wild geese to be the foul culprits. One solution was to keep the geese away using trained dogs. Perhaps what is good for the goose is not good for the gander after all. (Source: Enviro. Science & Technology, 1998, vol. 32, pp. 486A-487A)

Ed. Note: for those who missed Dr. Felsot's riveting piece on infants and nitrates, refer to "Re-examining the Link between Nitrites and 'Blue-Baby' Syndrome," in AENews *No. 150, October 1998, also available on the Internet at http://www2.tricity.wsu.edu/aenews/Oct98AENews/aenewsoctober98.*

PNN Update

Jane M. Thomas, Pesticide Notification Network Coordinator, WSU

The PNN is operated by WSU's Pesticide Information Center for the Washington State Commission on Pesticide Registration. The PNN system is designed to distribute pesticide registration and label change information to groups representing Washington's pesticide users. The material below is a summary of the information distributed on the PNN in the past month.

Our office operates a web page called PICOL (Pesticide Information Center On-Line). This provides a label database, status on registrations and other related information. PICOL can be accessed on URL **http://picol.cahe.wsu.edu** or call our office, (509) 372-7492, for more information.

Federal Issues

Label Changes

Bayer has revised the label for its product Nemacur 10% Turf Nematicide. The revisions include changing the name to "Turf Nematicide" from "Turf & Ornamental Nematicide," deleting all ornamental uses from the label, and deleting mole cricket from the pest list.

Drexel has issued a revised label for its insecticide Carbaryl 4L. The changes include:

- Adding lentil as a usage site;
- Adding alfalfa looper to the list of pests controlled on beans;
- Adding ditchbank, wasteland, hedgerows, rights-of-way, and roadsides as usage sites;
- Adding flea beetles to the list of pests controlled on wheat;
- Adding a bee caution statement to the apple and chestnut usage directions;
- Adding gypsy moth to the list of pests controlled on plums, prunes, and cherries;
- Adding navel orange worm to the list of pests controlled on walnuts;
- Adding spaganothus worm to the list of pests controlled on cranberries; and
- Adding strawberry clipper to the list of pests controlled on strawberries.

Manufacturers Use Deletions

In the December 2, 1998 Federal Register, EPA announced that it had received a request from Riverside/Terra to remove ditch bank as a usage site from the label for its herbicide Riverside 2,4-D LV6. Unless this request is withdrawn this deletion will become effective June 1, 1999. EPA has established existing stock provisions that would allow registrants to sell and distribute product under the previous labeling for a period of 18 months after approval of the use deletion.

Section 18 Specific Exemptions

On December 8, 1998, EPA granted a Section 18 specific exemption for the use of Goal 2XL to control broadleaf weeds in strawberries. The exemption allows for:

- Use on 1,500 acres in Whatcom, Pierce, King, and Snohomish counties;
- Use of a maximum of 0.5 pounds per acre either as a single application or as split applications during dormancy and following harvest;
- Use from December 15, 1998, until April 15, 1999 (The time period for use under this Section 18 is short due to EPA's concerns regarding surface water contamination. It is anticipated that when EPA resolves these concerns with the registrant, either this Section 18 will be amended or a new Section 18 will be issued extending this use.); and,
- A 123 day phi.

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…PNN Update, cont.

Jane M. Thomas, Pesticide Notification Network Coordinator, WSU

On December 3, 1998, EPA approved a Section 18 specific exemption for the use of Orbit on raspberries. This use had previously been approved as a crisis exemption granted by WSDA. While the use period expired November 1, 1998, making this an "after-the-fact" approval by EPA, there are two reasons for distributing this PNN notification:

- First, this was the first year that this use was requested, making formal approval by EPA significant; and,

- Second, EPA announced that a time-limited tolerance has been established for propicanozole on strawberries. The tolerance, which will be published in the December 31, 1998, Federal Register, expires December 31, 1999.

Supplemental Labels and Use Recommendations
Dow AgroSciences has issued additional use directions for its herbicide Sonalan HFP. The product bulletin provides chemigation instructions for Sonalan HFP in dry beans.

Miscellaneous Regulatory Information
In the December 4, 1998, Federal Register, EPA announced that the reregistration eligibility decision (RED) had been issued for iprodione and was available for comment. Anyone wishing to submit comments on this RED should do so by February 2, 1999. Currently, iprodione is labeled for the following commercial uses: apricot, bean, blackberry, boysenberry, broccoli, broccoli seed crop, Brussels sprouts seed crop, bulb, cabbage seed crop, carrot, carrot seed crop, cauliflower seed crop, cherry, cherry post harvest, conifer nursery, dewberry, dry bean, dry bulb onion, elderberry, flower, garlic, ginseng, golf course, grape, greenhouse ornamental, greenhouse rose, kale seed crop, kohlrabi seed crop, lawn, lettuce, lima bean, loganberry, nectarine, nectarine post harvest, ornamental, pea, peach, peach post harvest, plum, plum post harvest, potato, prune, radish seed crop, rape seed crop, raspberry, rose, rutabaga seed crop, shrub, stored fruit and vegetable, strawberry, turf, turnip seed crop, and youngberry. Rhone-Poulenc Ag Co., the current manufacturer of iprodione, has proposed to implement a series of risk mitigation measures based on EPA's risk assessment. These mitigation measures include:

- Proposed cancellation by Rhone-Poulenc of all residential uses of iprodione.

- For iprodione use on strawberries, increase the pre-harvest interval from 0-days to up to but not after first flower. In addition, the tolerance for strawberries will be reduced to the limit of quantitation (0.05 parts per million (ppm)).

- For iprodione use on all stone fruit (apricots, cherries, nectarines, plums, and prunes), increase the pre-harvest interval from 7 days to up to but not after petal fall (approximately 45-to-90-day pre-harvest interval). In addition, the tolerances for all stone fruit, including peaches, will be reduced to limit of quantitation (0.05 ppm).

- For iprodione use on table grapes (fresh, cooked, canned, juice, raisin or otherwise; mitigation does not include wine and sherry grapes), reduce the application rate from 4 times per season to one application per season at early- to mid-bloom. Tolerances remain unchanged consistent with the RED (10 ppm).

- Limit the maximum number of applications on non-residential turf, lawn, golf course, ornamental trees, and ornamental plants from "unlimited" to 6 per year, with the maximum annual application of up to but no more than 24 pounds (lbs.) active ingredient.

- Proposed cancellation by Rhone-Poulenc of all herbaceous ornamental seed treatment uses of iprodione.

In the December 23, 1998, Federal Register, EPA announced that the reregistration eligibility decision (RED) had been issued for aluminum and magnesium phosphide and was available for comment. Anyone wishing to submit comments on this RED should do so by March 23, 1999. The following is a summary list

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…PNN Update, cont.

Jane M. Thomas, Pesticide Notification Network Coordinator, WSU

of the mitigation measures that are proposed for all aluminum and magnesium phosphide products:

1. Notification of authorities and on-site workers. EPA is proposing that applicators would be required to ensure that the local authorities (fire departments, police departments etc.) are notified of the date, time, and location of planned fumigation events at least 24 hours in advance of beginning operations. EPA is also proposing that the applicators would be required to notify any worker or other person who might be expected to be in the proximity of the fumigation/ aeration, prior to fumigation.

2. Requirement for certified applicators. EPA is proposing to require that all persons who conduct fumigation/aeration activities be a certified applicator or that certified applicators, supervising the activity, be within 50 feet of the operation and within clear sightline of the persons conducting the operation. Current labels allow for non-certified fumigators and aerators to conduct activities under the direct supervision and physical presence of a certified applicator. However, it is possible under this current language for the certified applicator to be a significant distance away from the actual operation, impeding his/her ability to adequately oversee the operations.

3. Prohibit aeration of railcars, railroad boxcars, other vehicles, and containers en-route. EPA is proposing that aeration of fumigated railcars, railroad boxcars, shipping containers, and other vehicles while in transit would be prohibited. Labels would be required to include this prohibition.

4. Placarding fumigated structures, containers, and vehicles. EPA is proposing as a possible requirement that placards, or some other documentation that accompanies the structure/ container/vehicle, clearly state that prior to entering the structure/container/ vehicle a certified applicator or trained person under the supervision of a certified applicator must monitor the concentration of phosphine therein. Unloading where exposure to workers or bystanders is possible, or entry must not occur until the measured concentrations are below the pertinent standard unless appropriate PPE is worn. These placards must also contain information for reporting incidents which is consistent with the incident reporting program developed by the registrants.

5. Establish an incident reporting program. EPA is proposing that registrants would be required to establish programs for the comprehensive reporting of incidents to EPA on an annual basis.

6. Personal protective equipment. EPA is proposing to require that all persons involved in fumigation/ aeration operations wear respiratory protection during those operations unless it can be verified via monitoring that the concentrations of phosphine are at or below the established standard. Personal protective equipment (PPE) would be required to be worn by any person conducting monitoring activities until concentrations are known to be below the established limit. In the event of a spill or leak, a self-contained breathing apparatus (SCBA) or supplied air would be required to be worn until the spill has been cleaned or the leak has been repaired.

7. Require two-man operation for any activity that would involve entry into a fumigated structure. EPA is proposing that a minimum of two qualified persons would be needed to carry out any fumigation requiring entry into a structure. By implementing a two-man rule, if an applicator is unable to remove oneself from a dangerous exposure situation the second person can then assist in the safe removal of that person from danger. One person would be required to be a certified applicator and one person would need to be trained in the use of monitoring equipment and the health effects of phosphine gas.

8. Establish 500-foot buffer zone and restricted area around all fumigated structures. EPA is proposing to prohibit the fumigation and aeration of structures that are within 500 feet of residential areas. Further, a 500-foot restricted area would be implemented for all areas/structures undergoing fumigation/aeration. These steps would be taken primarily to prevent exposure to residential bystanders. Prior to entry to

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…PNN Update, cont.

Jane M. Thomas, Pesticide Notification Network Coordinator, WSU

this area monitoring would need to be conducted to ensure that the concentration of phosphine in the atmosphere is less than the 0.03-ppm standard or the limit of detection of the best available technology. Entry would not be allowed above that concentration unless appropriate PPE is worn. Placarding would be required to occur around the perimeter of the 500-foot restricted zone. Efforts would need to be made to request permission for placarding where placarding of the perimeter would involve other people's property.

9. Institute more thorough monitoring around the commodity. EPA is proposing to require stringent monitoring when unloading or otherwise disturbing a commodity that has been fumigated, since the level of phosphine gas may be higher at the core of the commodity than in the surrounding air. Monitoring at the door or hatch is insufficient in some cases. Therefore, concentrations would be required to be monitored at the top, middle, and bottom levels of the commodity/storage facility, where feasible.

10. Require seal/leak testing for fumigated structures. EPA is proposing that, prior to fumigation, the structure would undergo seal/leak testing using established methods to ensure that leakage during fumigation will not occur or is significantly minimized. Record of seal/leak tests must be retained by the certified applicator. Leaks would need to be repaired prior to fumigation. Fumigation would prohibited in cases where substantial leaks are discovered and cannot be sealed.

11. Establish a minimum distance from residences for burrow use and PPE for applicators during these applications. EPA is proposing that treatment of burrows for rodent control be prohibited within 100 feet of a residence. Note that current labels have a restriction of 15 feet, which may not be protective if burrow tunnels extend toward residences (basements). Applicators involved in the fumigation of animal burrows would be required to wear respiratory protection during the course of the operation. These actions would eliminate the residential uses of aluminum and magnesium phosphide but would allow for rodent control to continue under other circumstances. In cases of public health, where no other alternatives can be found, exceptions to this item may be made.

12. Notification of local residents. EPA is proposing to require notification so that residents in adjoining properties can make decisions regarding temporarily leaving their property during fumigation. Such notification would also be required for commercial and industrial sites that are near a planned fumigation operation. EPA proposes that the certified applicator would be required to ensure that all residents are notified within 750 feet of the fumigated structure.

13. Requirement for improved training for certified applicators. EPA is proposing to require that the registrants work with the appropriate personnel in EPA and in the states to develop a fumigator-specific certification program that adequately addresses all risks associated with the use of these chemicals. These programs would stress the highly toxic nature of the chemicals, fumigation/aeration-specific issues, and the importance of understanding and following label language exactly. Also, those requirements that result from the outcomes of the stakeholder meetings must be emphasized. This effort would also include consideration of the most effective method of delivering this training.

14. Monitoring methods to minimize exposure. EPA is proposing to require additional monitoring of areas around fumigated structures in order to reduce the potential for occupational and residential bystander exposure to phosphine. EPA is further proposing to require that no fumigated structure be entered until it can be verified that the concentrations of phosphine present are at or below the 0.03-ppm standard unless appropriate PPE is worn. A certified applicator or other competent person (industrial hygienist etc.) Would be required to conduct the monitoring. All fumigation/aeration operations would be covered by this requirement including outdoor operations.

EPA recognizes that current technology may not be capable of detecting phosphine at the 0.03 ppm level.

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…PNN Update, cont.

Jane M. Thomas, Pesticide Notification Network Coordinator, WSU

Therefore, the best available technology would be used with the limit of detection acting as the standard until new technology becomes available at which time the 0.03 ppm standard would be required. EPA is aware of "real-time" direct-read device technologies with a limit of detection of 0.05 ppm currently available. These devices can be equipped with audible alarms and data loggers.

15. Establish and define applicable exposure limits for the label. EPA is proposing to require that all applicable safety standards appear on the label.

State Issues

New Registrations

WSDA has registered Bayer's herbicide Axiom DF for use. The product is registered for use on field corn and soybeans. In addition, Bayer has issued a supplemental label providing crop rotation recommendations for this product.

WSDA has registered Albaugh's herbicide See 2,4-D Low Volatile Ester for use. This product is labeled for use on the following PNN-related sites: aquatic site, barley, canal, corn, ditch bank, impounded water, forest conifer release/site preparation, grass seed, oat, pasture, rangeland, rye, sorghum, soybean, tidal marsh, turf, and wheat.

WSDA has registered Bonide's Liquid Copper Fungicide for use. This product is labeled for use on the following PNN-related sites: bean, beet, blackberry, boysenberry, broccoli, Brussels sprouts, bulb, cabbage, carrot, cauliflower, celery, cherry, conifer, cucurbit, evergreen tree, grape, loganberry, nectarine, onion, ornamental, pea, peach, pepper, potato, raspberry, rose, strawberry, tomato, and walnut.

WSDA has registered a new insecticide for Blue Ridge Pharmaceuticals. The product is Cyfly 1% Premix and is registered for use in poultry operations to control flies and maggots.

WSDA has registered two Biocontrols pheromone-based products for use. These are:

- Isomate-M 100: Labeled for oriental fruit moth, macadamia nut borer, and koa seed worm control on peaches, nectarines, apricots, plums, apples, and quince.

- Isomate-CM/LR Pheromone: Labeled for codling moth, oblique banded leafroller, and Pandemis leafroller control on apples and pears.

WSDA has registered Biowork's T-22G Biological Plant Protectant Granules for use. The microbial pesticide is registered for use for the control of Fusarium, Pythium, and Rhizoctonia on the following PNN-related sites: bean, cabbage, cucumber, deciduous/shade tree, field corn, greenhouse cole crops, greenhouse cucumber, greenhouse nursery, greenhouse ornamental, greenhouse tomato, nursery, ornamental, ornamental tree, potato, shrub, sorghum, sugarbeet, sweet corn, and tomato.

WSDA has registered Brandt's product Saf-T-Side Spray Oil Emulsion Insecticide for use. The product is registered for use on the following PNN-related sites: apple, apricot, asparagus, bean, blackberry, blueberry, boysenberry, broccoli, Brussels sprout, bulb, cabbage, cauliflower, celery, cherry, Chinese broccoli, Chinese cabbage, conifer, corn, corn seed crop, cucumber, cucurbit, deciduous/shade tree, dewberry, eggplant, field corn, flower, grape, greenhouse bulb, greenhouse flower, greenhouse ornamental, greenhouse rose, kale, kohlrabi, lettuce, loganberry, melon, mustard, nectarine, onion, ornamental, ornamental tree, peach, pear, pepper, plum, popcorn, potato, prune, pumpkin, radish, raspberry, rose, shrub, squash, strawberry, sugarbeet, sweet corn, sweet potato, walnut, and youngberry.

WSDA had registered Boehringer Ingelheim's livestock insecticide Catron IV for use. This product is labeled for use on cattle, goats, sheep, swine, and horses.

WSDA has registered three different cattle ear tag products by Boehringer Ingleheim. The products and their active ingredients are:

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- Ectrin Insecticide Cattle Ear Tag - fenvalerate

- Patriot Defense System Cattle Ear Tag - diazinon

- Commando Defense System Insecticide Cattle Ear Tag - ethion

WSDA has registered two Boehringer Ingleheim tetrachlorvinphos insecticides for use. The products and their labeled usage sites are as follows:

- Ravap EC: animal quarters, beef cattle, dairy cattle, dairy building, farm building, non-dairy livestock building, poultry, and poultry building/yard.

- Rabon 50 WP Insecticide - animal quarters, beef cattle, dairy building, manure, non-dairy livestock building, poultry building/yard, recreation area, and swine.

WSDA has registered a pheromone-based product for use. The product, Checkmate SF Dispenser, is labeled for the control of oriental fruit moth and peach twig borer on apricot, cherry, filbert, nectarine, peach, plum, prune, and walnut trees.

WSDA has registered Novartis' product Break EC for use. The fungicide is labeled for the control of brown rot blossom blight and fruit belly rot on apricots, peaches, nectarines, plums, and prunes.

WSDA has registered the fungicide Class Potato Seed Treater 6% for use. The product is labeled for use to treat potato seed pieces.

WSDA has registered the herbicide Silhouette for use. This Cenex product is registered for use on the following sites: alfalfa, apple, apricot, asparagus, barley, bean, beet, blackberry, blueberry, boysenberry, broccoli, Brussels sprout, buckwheat, cabbage, carrot, cauliflower, celery, cherry, Chinese cabbage, Christmas tree plantation, collard, conservation reserve program, corn, cranberry, cucumber, currant, dewberry, ditch bank, eggplant, elderberry, endive, farm building area around, fencerow, filbert, forest conifer release/site preparation, garlic, golf course, gooseberry, grape, grass hay, greenhouse, horseradish, industrial site, Jerusalem artichoke, kale, kiwifruits, kohlrabi, leek, lentil, lettuce, loganberry, melon, millet, mustard, nectarine, noncrop non-agricultural area, oat, okra, olallieberry, onion, orchard floor, parsley, parsnip, pea, peach, pear, pepper, plum, potato, prune, pumpkin, quince, radish, railroad right-of-way, raspberry, rhubarb, roadside right-of-way, rutabaga, rye, school outdoor, shallot, sorghum, soybean, spinach, squash, sugarbeet, sweet potato, Swiss chard, tomatilo, tomato, triticale, turnip, walnut, watermelon, wheat, and yam.

WSDA has registered Parathion 8EC for use. This Cenex insecticide is registered for use on the following sites: alfalfa, alfalfa seed crops, barley, canola, corn, rape, sorghum, soybean, sunflower, and wheat.

WSDA has registered Cheminova's Glyfos Bulk Herbicide for use. This product is labeled for use on the following sites: alfalfa, apple, apricot, asparagus, asphalt/cement, barley, bean, beet, blackberry, blueberry, boysenberry, broccoli, Brussels sprout, buckwheat, cabbage, carrot, cauliflower, celery, cherry, Chinese cabbage, Christmas tree plantation, collard, conservation reserve program, corn, cranberry, cucumber, currant, dewberry, ditch bank, eggplant, elderberry, endive, farm building area around, fencerow, filbert, forest conifer release/site preparation, garlic, golf course, gooseberry, grape, grass hay, horseradish, industrial site, Jerusalem artichoke, kale, kiwifruits, kohlrabi, leek, lentil, lettuce, loganberry, melon, millet, mustard, nectarine, noncrop non-agricultural area, oat, okra, olallieberry, onion, parsley, parsnip, pea, peach, pear, pepper, plum, potato, prune, pumpkin, quince, radish, railroad right-of-way, raspberry, recreation area, rhubarb, roadside right-of-way, rutabaga, rye, school outdoor, sorghum, soybean, spinach, squash, sugarbeet, sweet potato, Swiss chard, tomatilo, tomato, triticale, turnip, walnut, watermelon, wheat, and yam.

WSDA has registered Ecogen's AQ 10 T/O Biofungicide for use on ornamentals, greenhouse ornamentals, and nurseries.

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WSDA has registered Drexel's Atra-5 Herbicide for use. This product is labeled for use on conifers, corn fallow, wheat fallow, corn, forest nursery/seed orchard, lawn, ornamental, recreation area, roadside right-of-way, sorghum, sorghum fallow, and turf.

WSDA has registered Drexel's fungicide KOP-Hydroxide 50 for use. This product is labeled for use on the following sites: alfalfa, apple, apricot, barley, bean, blackberry, broccoli, Brussels sprout, cabbage, cantaloupe, carrot, cauliflower, celery, cherry, cowpea, cranberry, cucumber, currant, eggplant, filbert, flower, gooseberry, grape, greenhouse nursery, greenhouse ornamental, greenhouse rose, honeydew, hop, lima bean, muskmelon, nectarine, nursery, onion, ornamental, ornamental tree, pea, peach, pear, pepper, plum, potato, prune, pumpkin, raspberry, rose, shrub, squash, strawberry, sugarbeet, tomato, walnut, watermelon, and wheat.

WSDA has registered Drexel's insecticide Pilot 4E for use. This product is labeled for use on the following sites: alfalfa, apple, asparagus, broccoli, Brussels sprout, cabbage, cauliflower, cherry, Chinese cabbage, Christmas tree plantation, collard, cranberry, dry bulb onion, field corn, filbert, grape, kale, kohlrabi, mint, nectarine, non-bearing peach, peach, pear, plum, prune, radish, rutabaga, sorghum, soybean, strawberry, sugarbeet, sunflower, sweet corn, sweet potato, and turnip. WSDA has registered Drexel's insecticide Pilot 4E for use. This product is labeled for use on the following sites: alfalfa, apple, asparagus, broccoli, Brussels sprout, cabbage, cauliflower, cherry, Chinese cabbage, Christmas tree plantation, collard, cranberry, dry bulb onion, field corn, filbert, grape, kale, kohlrabi, mint, nectarine, non-bearing peach, peach, pear, plum, prune, radish, rutabaga, sorghum, soybean, strawberry, sugarbeet, sunflower, sweet corn, sweet potato, and turnip.

WSDA has registered Cal Crop USA's insect repellant Envirepel-20 for use. This product is labeled for use on the following sites: alfalfa, apple, apricot, artichoke, asparagus, barley, bean, beet, blackberry, blueberry, boysenberry, broccoli, Brussels sprout, buckwheat, cabbage, canola, cantaloupe, carrot, cauliflower, celery, cherry, chestnut, chickpea, Chinese mustard, clover, collard, corn, crabapple, cranberry, cucumber, currant, deciduous/shade tree, dewberry, eggplant, elderberry, endive, fennel, filbert, flower, garlic, ginseng, gooseberry, grape, grass, greenhouse flower, greenhouse nursery, greenhouse ornamental, greenhouse rose, greenhouse shrub, herb, honeydew, hop, horseradish, kale, kiwifruits, kohlrabi, leek, lentil, lettuce, melon, millet, muskmelon, mustard, nectarine, nursery, oat, olallieberry, onion, ornamental, ornamental tree, parsley, parsnip, pea, peach, pear, pepper, plum, potato, pumpkin, quince, radish, rape, raspberry, rutabaga, rye, salsify, shallot, shrub, soybean, spinach, squash, strawberry, sugarbeet, sweet potato, Swiss chard, tomatilo, tomato, turnip, vetch, walnut, watercress, watermelon, wheat, yam, and youngberry.

WSDA has registered both Drexel's Sanachem Diuron 4L and Sanachem Diuron 80 DF for use. These herbicides are registered for use on the following crops: alfalfa, apple, asparagus, barley, birdsfoot trefoil, blackberry, blueberry, bluegrass seed crop, boysenberry, bulb, canal, caneberries, dewberry, ditch bank, farm building area around, field corn, gooseberry, grape, grass seed crop, industrial site, loganberry, mint, noncrop non-specific, oat, pasture, peach, pear, raspberry, red clover, right-of-way, roadside right-of-way, railroad right-of-way, utility right-of-way, wheat, and youngberry.

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Pesticide Information Center
Washington State University Tri-Cities
2710 University Drive
Richland, WA 99352-1671

Tolerance Information

Jane M. Thomas, Pesticide Notification Network Coordinator, WSU

Tolerance Information						
Chemical (type)	**Federal Register**	**Tolerance (ppm)**	**Commodity (raw)**	**Time-Limited**		
				Yes/No	**New/Extension**	**Expiration Date**
cymoxanil (fungicide)	12/2/98 page 66459	1.00	hops, dried	Yes	New	4/15/00
Comment: This time-limited tolerance is established in response to EPA granting a Section 18 for the use of cymoxanil to control downy mildew in Idaho hops.						
imidacloprid (insecticide)	12/2/98 page 66438	0.10 0.20 0.05	field corn, forage field corn, stover field corn, grain	Yes	New	5/1/00
Comment: This time-limited tolerance is established in response to EPA granting Section 18's for the use of imidacloprid on corn to control flea beetle in Iowa and Stewart's wilt in Illinois.						
metolachlor (herbicide)	12/2/98 page 66435	0.30	spinach	Yes	Extension	5/15/00
Comment: This time-limited tolerance is extended in response to EPA granting Section 18's for the use of metolachlor to control weeds in spinach in numerous states.						
primisulfuron-methyl (herbicide)	12/2/98 page 66456	0.10	bluegrass hay	Yes	Extension	4/30/00
Comment: This time-limited tolerance is extended in response to EPA again granting Section 18's for the use of primisulfuron-methyl to control weeds in bluegrass seed crops in Washington and Idaho.						
tebuconazole (fungicide)	12/2/98 page 66449	4.00	hops	Yes	New	12/31/00
Comment: This time-limited tolerance is established in response to EPA granting Section 18's for the use of tebuconazole to control powdery mildew on hops in Oregon, Washington, and Idaho.						
triasulfuron (herbicide)	12/2/98 page 66447	0.50	hog, kidney	No	N/A	N/A
Comment: When the triasulfuron tolerances for grass and livestock kidney were originally published in the August 18, 1998, Federal Register, the tolerance for hog kidney was inadvertently omitted. In this notice EPA is correcting that omission.						
thiabendazole (fungicide)	12/4/98 page 66994	0.10	lentils	Yes	Extension	4/30/00
Comment: This time-limited tolerance is extended in response to EPA again granting Section 18's for the use of thiabendazole to control *Ascochyta* blight in lentils grown in Washington, Idaho, and North Dakota.						
myclobutanil (fungicide)	12/4/98 page 66996	0.30	cucurbits	Yes	Extension	5/30/00
Comment: This time-limited tolerance is extended in response to EPA again granting Section 18's for the use of myclobutanil to control powdery mildew on cucurbit vegetables in various states.						
zinc phosphide (rodenticide)	12/9/98 page 67794	0.05 0.05	potato sugar beet (root and top)	Yes	New	5/1/00
Comment: These time-limited tolerances are being established in response to crisis exemptions being granting for the use of zinc phosphide for vole control in Idaho potatoes and sugar beets.						
tralkoxydim (herbicide)	12/16/98 page 69194	0.02 0.05 0.05 0.02	barley, grain and hay barley, straw wheat, forage and straw wheat, grain and hay	Yes	New	2/28/03
Comment: These time-limited tolerances are established in response to a request by the registrant, Zeneca.						
copper ammonium complex (fungicide)	12/16/98 page 69205	exempt	raw agricultural commodities			
Harpin protein	12/18/98 page 70027	exempt	all food commodities	Yes	New	10/31/00
Comment: This temporary/ time-limited exemption from the requirement for a tolerance is being established in response to the issuance of an EUP.						

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…Tolerance Information, cont.

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Tolerance Information						
Chemical (type)	Federal Register	Tolerance (ppm)	Commodity (raw)	Time-Limited		
				Yes/No	New/Extension	Expiration Date
tebufenozide (insecticide)	12/18/98 page 70030	0.01	eggs	Yes	New	12/31/00
		5.00	grass, forage			
		18.00	grass, hay			
		0.10	hogs, fat and mbp			
		0.02	hogs, kidney and meat			
		1.00	hogs, liver			
		0.25	sweet potato			
		0.10	poultry, fat			
		0.01	poultry, meat			
		0.05	poultry, mbp			
Comment: These time-limited tolerances are being established in response to crisis exemptions being granting for the use of tebufenozide to control armyworms in pastures, peanuts, rice, and sweet potatoes in Arkansas, Louisana, Oklahoma, and Texas.						
triazamate (insecticide)	12/23/98 page 71018	0.10	apple	Yes	New	12/31/01
Comment: This time-limited tolerance is being established in response to the issuance of an EUP.						

Federal Register Excerpts

In reviewing the December postings in the Federal Register, we found the following items that may be of interest to the readers of *Agrichemical and Environmental News*.

In the December 4, 1998, Federal Register, EPA announced that the iprodione RED was available for review and that written comments would be accepted until February 2, 1999. (12/4/98 page 67066)

In the December 4 , 1998, Federal Register, EPA announced it is soliciting comments on three draft science policy papers: "Proposed Threshold of Regulation Policy When a Food Does Not Require a Tolerance," "Assigning Values to Nondetected Nonquantified Pesticide Residues in Human Health Dietary Exposure Assessments'' and "A Statistical Method for Incorporating Nondetected Pesticide Residues into Human Health Dietary Exposure Assessments." Comments on these draft policy papers are due to EPA by February 4, 1999. (12/4/98 page 67063)

In the December 4, 1998, Federal Register, EPA published its finding that residues of any edible food commodity, used as a pesticide, when applied in accordance with good agricultural practices, are exempt form the requirement of a tolerance in or on all food commodities. EPA did state that residues of peanuts, tree nuts, milk, soybeans, eggs, fish, crustacea, and wheat, when used as a pesticide, were not included in this exemption. (12/4/98 page 66999)

In the December 16, 1998, Federal Register, EPA announced that the dicofol RED was available for review and that written comments would be accepted until February 16, 1999. (12/16/98 page 69282)

In the December 16, 1998, Federal Register, EPA announced that the deet, triclopyr, diclobenil, propachlor, and methylisothiazolinone RED's are now available for review. Written comments will be accepted until February 16, 1999. (12/16/98 page 69281)

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…Federal Register Excerpts, cont.

In the December 18, 1998, Federal Register, EPA announced the availability of certain documents developed as part of the RED process for four orgnaophosphates. The documents are the preliminary ecological risk assessments for ethoprop, methyl parathion,

temephos, and terbufos and the preliminary human health assessments for methyl oparathion. Written comments on the documents are due to EPA February 16, 1999. (12/18/98 page 70126)

In the December 23, 1998, Federal Register, EPA announced that the RED for aluminum phosphide and magnesium phosphide was available for review and that written comments would be accepted until March 23, 1999. (12/23/98 page 71123)

In the December 24, 1998, Federal Register, the Agricultural Marketing Service (AMS) announced that it was extending the comment period on the amendments to the Federal Seed Act (FSA) regulations, previously announced in the October 20, 1998 Federal Register. The proposed changes include prohibiting shipment of agricultural and vegetable seeds containing seeds of noxious weeds, adding two kinds to the list of those subject to the FSA, and updating the seed testing and certification regulations.

The extension of the comment period for an additional 45 days, from December 21, 1998 until February 4, 1999, comes at the request of The American Seed Trade Association. (12/24/98 page 71232)

In the December 28, 1998, Federal Register, EPA announced that it was inviting comments on its Endocrine Disruptor Screening Program. The Endocrine Disruptor Screening and Testing Advisory Committee recommended expansion of the screening program beyond the statutory minimum. EPA is seeking comments on this proposed expanded program. Comments must be submitted to EPA by February 26, 1998. (12/28/98 page 71541)