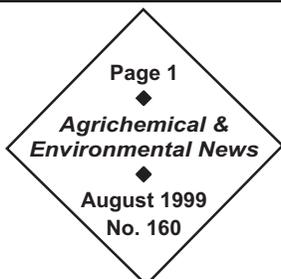


Agrichemical and Environmental News

A monthly report on pesticides and related environmental issues



In This Issue

Proposed Section 18 Changes: Timing is Everything	1
Transition Strategies in Cranberries	4
Are Synthetic Chemicals Guilty of Gender Bias?	8
PNASH Farm Summit	12
Food Safety Conference Focuses on Pathogens	14
1999 Recycling Schedule	18
Dear Aggie	19
PICOL Page Adds Organics	20
Pesticide Issues Conference	20
Federal Register Excerpts	20
Tolerance Information	21
PNN Update	22

Comments to: Catherine Daniels
 WSU Pesticide Information Center
 2710 University Drive
 Richland, WA 99352-1671
 Phone: 509-372-7495
 Fax: 509-372-7460
 E-mail: cdaniels@tricity.wsu.edu

The newsletter is on-line at
www2.tricity.wsu.edu/aenews,
 or via the Pesticide Information
 Center (PICOL) Web page at
<http://picol.cahe.wsu.edu>

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 ATTN: Sally O'Neal Coates, Editor.

Proposed Section 18 Changes Timing is Everything

Dr. Catherine Daniels, Pesticide Coordinator, WSU

On June 3, 1999, the Environmental Protection Agency (EPA) issued a proposed rule on setting tolerances for Section 18 emergency exemptions. Have you read it? If not, you should. It may change the way you market your crops.

The proposal deals in part with four suggested approaches to setting time-limited tolerances for Section 18s. These four approaches are outlined toward the end of this article. But hidden within the text is a little paragraph that could pose **significant problems for those operating under a crisis exemption**. It reads as follows:

Occasionally, use of the pesticide might occur before EPA actually establishes the necessary time-limited tolerance, such as in the case of a crisis exemption. When a time-limited tolerance is established after the time that use of the pesticide product is authorized, the residues on the subject commodity are only legal during the period of time prior to the expiration and revocation of the tolerance. In other words, there would be no 'pipeline' provision for treated commodities if use occurred before a tolerance was set.

All time-limited tolerances have an expiration date. To keep things neat and tidy, a tolerance revocation usually occurs at the same time. Even after revocation, food that contains residues of a pesticide will still be legally marketable so long as the residues are the result of lawful use of the pesticide under the terms of the exemption and are at levels within the established tolerance. This is called a "pipeline provision," because it allows for the time lag of the processing, marketing, and distribution pipeline. In practical terms, it means if a grower applies a pesticide during the exemption period and the measured residues on the food fall within the allowable category, everything is fine. If the pesticide is applied outside of the exemption time period, the grower could face legal action for improper application, but if the food residue were within allowable levels, the food would not be considered adulterated and could be sold. Under the wording of the above paragraph, this would not apply to commodities treated under a crisis exemption.

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Section 18s & Timing, cont.

Dr. Catherine Daniels, Pesticide Coordinator, WSU

I found this so startling, I called the EPA to make sure I had read this paragraph right. Indeed, I had. Under this language, **if you use a pesticide under a crisis exemption, the tolerance revocation date is the drop-dead date for your commodity.** If it is marketed after that date it is considered adulterated.

Where Does This Leave Us?

Unless the proposed rule language is changed, growers and processors will need to carefully track the movement of their crisis-treated commodities to ensure they don't get caught with adulterated foodstuffs.

If the petition requests a long time-limited tolerance, EPA will consider it in order to help clear the channels of trade. However, under the proposed wording, no "pipeline provision" exists for the marketing of treated commodities.

As this newsletter went to press, Washington State Department of Agriculture (WSDA) was responding to EPA on behalf of Washington growers. Their correspondence suggests that EPA should consider establishing time-limited tolerances for an extended number of years (instead of just two years), and that the pipeline provision be allowed for commodities treated under a crisis exemption. Comments are being officially accepted until August 2, 1999, at **opp-docket@epamail.epa.gov**. Refer to docket OPP-181051. Often, EPA will accept comments after the deadline, as long as you get them in quickly.

The bulk of EPA's proposed ruling deals with four different approaches being considered for setting time-limited tolerances for Section 18 exemptions.

Background: Time-Limited Tolerances

As many of you know, the 1996 Food Quality Protection Act (FQPA) requires EPA to establish time-limited tolerances, or exemptions from a tolerance, for any pesticide use under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Section 18 that

may result in residues in or on food. (I'm using the word "tolerance" throughout the article to mean both "tolerance" and "exemption from the requirement of a tolerance.") Before FQPA, EPA did not establish a tolerance; they simply told the Food and Drug Administration (FDA): (1) they had granted an emergency exemption, and (2) the residue levels

that would be present in or on affected foods. FDA would then refrain from enforcement on residue-containing foods that had resulted from a pesticide used under the exemption.

Times have changed, however, and EPA now considers the following points when issuing a time-limited tolerance:

- ◆ The tolerance must be considered "safe."
- ◆ Special consideration must be given to infants' and children's exposure.
- ◆ Cumulative effects of the residues must be considered.
- ◆ Aggregate exposure levels must be considered.
- ◆ Endocrine-disrupting effects must be considered.
- ◆ Appropriate safety factors must be determined.

Comments are being accepted until August 2 at opp-docket@epamail.epa.gov—often, EPA will accept comments after the deadline...

Section 18s & Timing, cont.

Dr. Catherine Daniels, Pesticide Coordinator, WSU

EPA tries to notify Section 18 applicants of their decision within fifty calendar days of receipt of application. In the 1998 fiscal year, EPA averaged fifty-six days for notification. In order to perform a timely review within this fifty-day goal, EPA said in the Federal Register that it "believes it is reasonable to rely on available data." That means they won't wait for data to be generated, nor for data submitted for other petitions to be reviewed.

Presently, EPA evaluates each Section 18 petition on a case-by-case basis. First, they determine whether adequate reliable data are available to determine safety. Many Section 18 petitions are for chemicals already approved for use on other crops; in those cases, human health and environmental data are often readily available. If adequate data are not available, EPA may ask the applicant to submit additional data or may deny the petition. Bear in mind that applicants are not likely to have that sort of data available, and that the costs of generating such data usually make it unrealistic for the applicant to supply it.

Additional information on data requirements, a Pesticide Registration (PR) notice was issued on January 31, 1997. You may view this document, PR 97-1, at www.epa.gov:80/fedrgstr/EPA-PEST/1999/June/Day-09/6071.pdf.

Four Proposed Approaches

EPA is considering four different approaches on setting Section 18 time-limited tolerances.

Approach One is to continue with the case-by-case method they have been using since August 3, 1996. EPA is in favor of this approach as their review time is near the fifty-day goal and the system seems to be

working.

Approach Two is to require the entire data set used for full tolerance applications. EPA is not in favor of this approach as it is "unduly burdensome" to the applicants and would be "impractical" for the agency to review on the fifty-day track.

Approach Three is to create a new minimum data set specifically for Section 18s. This would be a subset of the data normally required for a full tolerance application. EPA is not in favor of this approach either, as they believe that it would also cause significant delays in their review time and that applicants would still be unable to supply the technical data.

Approach Four is to skip doing a full risk assessment, assessing instead the incremental risk of the proposed Section 18 use only. If EPA found the incremental risk insignificant, it would establish a time-limited tolerance and grant the Section 18 use without conducting a full

aggregate risk assessment for the existing uses. EPA did not comment on whether or not it supported this approach, which was proposed by the National Food Processors Association.

Dr. Catherine Daniels is the Pesticide Coordinator at Washington State University's Pesticide Information Center, and Managing Editor of Agrichemical and Environmental News. She can be reached at cdaniels@tricity.wsu.edu or (509) 372-7495.

(NOTE: To obtain information from the Federal Register, point your browser to <http://www.epa.gov/fedrgstr/> and click on the calendar date you want. For the full text of the proposed ruling discussed here, click on June 3 of the 1999 calendar. Scroll to Environmental Protection Agency, then Proposed Rules: Pesticides: Emergency Exemptions.)

EPA is considering four different approaches on setting Section 18 time-limited tolerances...

Cranberries in Transition Toward a Biorational IPM Strategy in Washington State

By Dr. Steve Booth, Consultant Entomologist, and Dr. Kim Patten, Horticulturist, WSU

Ten years ago in the Pacific Northwest, apple growers removed hundreds of acres of Red Delicious trees, mostly in reaction to media-generated public apprehension about a synthetic plant hormone used to enhance fruit color to levels demanded by the consumer at large. During the ensuing decade, concerns about pesticides in foods and the environment continued to increase, resulting in movements (including the federal Food Quality Protection Act of 1996) to severely restrict the use of some of the most frequently used pesticides. However, consumer preference for blemish-free products declined only slightly. One corporate response to the dilemma was to develop pesticides of novel chemistries and modes of action that are less toxic to mammals than conventional pesticides. In many cases, such agents were designed to suppress target pests while selectively allowing for the establishment and development of arthropod natural enemies and pollinators. Hence, they were termed "biorational." Unfortunately, biorationals usually cost more to produce than conventional pesticides and often require specific application timing, hence greater monitoring efforts.

In an effort to facilitate development and use of reduced-risk pesticides, the Environmental Protection Agency (EPA) pledged to "fast-track" registration of such agents, yet that process is still time-consuming and expensive. Traditional agricultural practices are slow to change, especially on the family farm. Commodity markets are erratic. Throw in the effects of weather and international markets and the economic puzzle is virtually unfathomable. For example, apple growers removed hundreds of acres of Red Delicious trees last year, mostly in reaction to an influx of Chinese apple juice, made from apples which may have been treated with broad-spectrum organophosphate pesticides.

You all are aware of such environmental and economic "Catch-22s," but they are magnified to us who work in minor crops, where government and corporate interests are smaller, alternative markets are fewer, and the fate of an entire industry can depend on the production of a few growing regions. The web

of ironies, controversies, and realities is especially tangled in Washington State cranberry production.

In collaboration with the Cranberry Institute, Ocean Spray Cranberries Inc., the EPA, the Washington State Department of Agriculture, and others, we envisioned a plan to revise the current insect pest management program in Washington State cranberries. Such plans, known as "transition strategies," are designed to affect a transition to reduced-risk pesticide chemistries and application methods, while maintaining economic viability of the industry. Strategies must take into account not only the primary pest(s), but other factors particular to a cropping pattern.

Our transition strategy focused on the key pest of the region, the blackheaded fireworm (BHFV), *Rhopobota naevana*. Following an initial screening of several pesticides, we conducted two years of field plot trials featuring selected pesticides and application techniques, on-farm season-long demonstration trials, and grower education manuals and workshops.

Factors for Cranberry

The cultivated cranberry (*Vaccinium macrocarpon* Ait.), indigenous to northeastern North America, is limited in production and range, since it requires large amounts of water and acidic soils (pH 4.5–5.5). It was initially grown only in natural peat bogs on both northern coasts of North America. These environmentally sensitive wetland areas are not especially well suited for other agricultural pursuits. In Washington, cranberries are grown on the Long Beach peninsula and in Grayland (Pacific and Grays Harbor counties), both formerly important ports for local fisheries now in decline.

For decades, cranberry insect pests were suppressed to very low levels with DDT, then parathion. Since the loss of parathion in 1995, diazinon, acephate, and azinphosmethyl have been used. Today, the registrations of these three pesticides in cranberry are threatened by concerns about environmental effects. Organophosphate residues have been found in

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Cranberries in Transition, cont.

By Dr. Steve Booth, Consultant Entomologist, and Dr. Kim Patten, Horticulturist, WSU

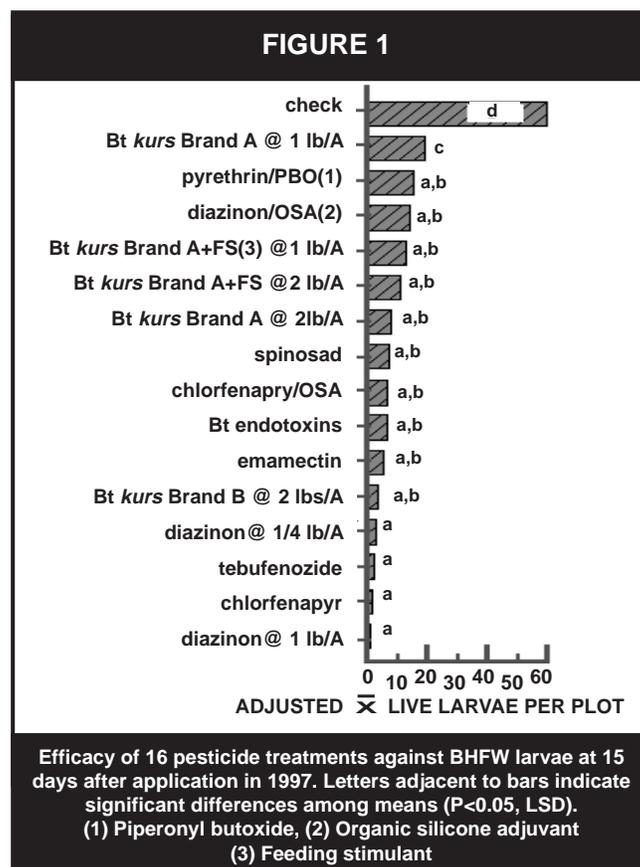
surface water samples collected from ditches draining from cranberry bogs in Washington at levels that exceed the LC₅₀ for some aquatic invertebrates. (LC₅₀ is defined as the lethal concentration for 50% of the subject organisms.) This, along with other water quality issues, has been a major concern of a neighboring tribe of Native Americans. Although a 1997 EPA report, "The Shoalwater Bay Indian Reservation: A Limited Environmental Assessment 1994-1995" could not link surface water contamination to neonatal health problems of the tribe, it did recommend that federal and state agencies work closely with growers and other parties to revise and improve the process of selecting pesticides.

The pesticide application process is also under scrutiny. In West Coast cranberry, nearly all insecticides and fungicides are applied through solid set sprinkler systems. Chemigation procedures are easier and less detrimental to cranberry vines than application by boom sprayer, but are much less accurate. Even well constructed, properly maintained, and correctly calibrated systems may deliver different volumes of water before and after the pesticide, depending on the distance between sprinkler and pump.

Exploring Solutions

The cranberry industry is trying to reduce the potential for environmental contamination in several ways. An initial approach, based on recommendations from regulatory agencies, was for growers to permanently

cover the drainage ditches surrounding their bogs. At a later point, these same agencies decided that covers would block too much light and disrupt the aquatic community. Our research has taken a second approach: the judicious application of reduced-risk material.



Getting to Know BHFV

Biorational control strategies necessitate a complete understanding of target pests, so our first step was to understand the life cycle and habits of BHFV. BHFV, for example, has a more protected habitat than many caterpillars, including other leafrollers. The timing of its biological phases is also less predictable. In growing regions such as Wisconsin, a temperature-driven model can accurately predict emergence of the larvae from the eggs. But in Washington, the overwintering egg hatches from late April through May, when weather conditions are extremely unpredictable. First instar larvae mine the insides of cranberry leaves for a few days before

moving to feed on the flower buds, where they reside inside a webbed cluster of petals fairly invulnerable to contact pesticides. This invulnerable period and the uncertainty of its timing complicate management efforts.

First generation adults generally emerge during late May to mid-June, but cool temperatures can delay egg laying and emergence from the egg. Consequently, BHFV are present in multiple life-stages during July and second generation larvae reach the

Cranberries in Transition, cont.

By Dr. Steve Booth, Consultant Entomologist, and Dr. Kim Patten, Horticulturist, WSU

invulnerable stage inside developing berries during August. Second generation adults emerge from early August to mid-September and produce both a third larval generation and overwintering eggs.

An economic threshold level for BHF_W has not been determined, but the traditional practice has been to apply an insecticide on May 5 if more than two larvae are found per twenty-five sweeps with a hand-held net. In recent years, applications against second generation larvae were made two weeks after peak abundance of male moths captured in pheromone traps.

Research and Results

Our initial objectives were to screen several pesticides, feeding stimulants, and adjuvants for efficacy against BHF_W larvae (some of these are shown in Figure 1). Results aided in the selection of tebufenozide (Confirm®, Rohm and Haas) and spinosad (then NAF-315, Novartis; now Spintor® and Success®, Dow AgroSciences) for further study and advancement in the registration process. In 1998 (the second year), we focused not only on relative efficacies, but also on the importance of number and time of applications and the effects of post-application wash-off. We also initiated several on-farm whole-

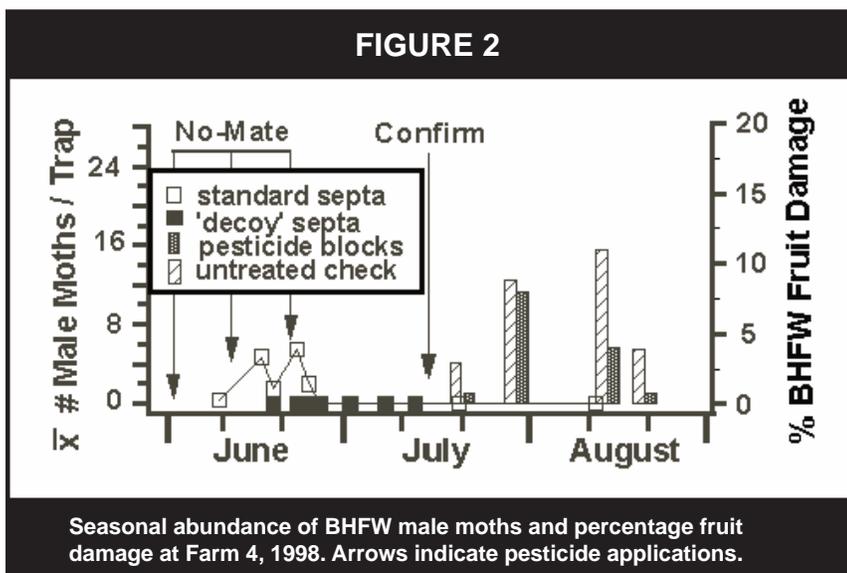
bog trials featuring tebufenozide to target young larvae and a sprayable formulation of encapsulated synthetic female BHF_W pheromones (then No-Mate®, Ecogen; now MEC, 3M Canada) to disrupt mating. To keep costs low, we included some Bt-based pesticides (Crymax®, Ecogen; and Match®, then Mycogen now Dow AgroSciences). Results showed the program effectively reduced fruit damage, especially by season's end (Figure 2).

Two other useful pieces of information emerged during the course of the research. First, our observations suggested that low levels of BHF_W may have little overall effect on yield, therefore the economic threshold of BHF_W may be higher than supposed. Second, in the course of establishing protocols, we found some sprinkler systems to be so miscalibrated that chemigation had been profoundly inaccurate in those bogs for years.

Factors Beyond the Bog

Representatives of the cranberry industry have been fairly successful in lobbying the EPA to both conserve existing organophosphate pesticides and acquire registration of new materials. The Cranberry Institute is a paradigm for the coordination of research efforts among regions and the prioritization of compounds to

be advanced to the registration pathway. Still, the recent profusion and rapid evolution of biorational products have been somewhat confounding. For example, after two years of intensive efforts to register tebufenozide in cranberry, another chemical of similar structure and mode of action, methoxyfenozide (Intrepid®, Rohm and Haas) has demonstrated superior efficacy in some trials, tempting some cranberry workers to refocus on that material. Unfortunately, the EPA is very reluctant to issue an emergency exemption (Section 18) for a pesticide if another has advanced to that stage or beyond (Section 3 status). This holds even for cases of potential resistance development. Because



Cranberries in Transition, cont.

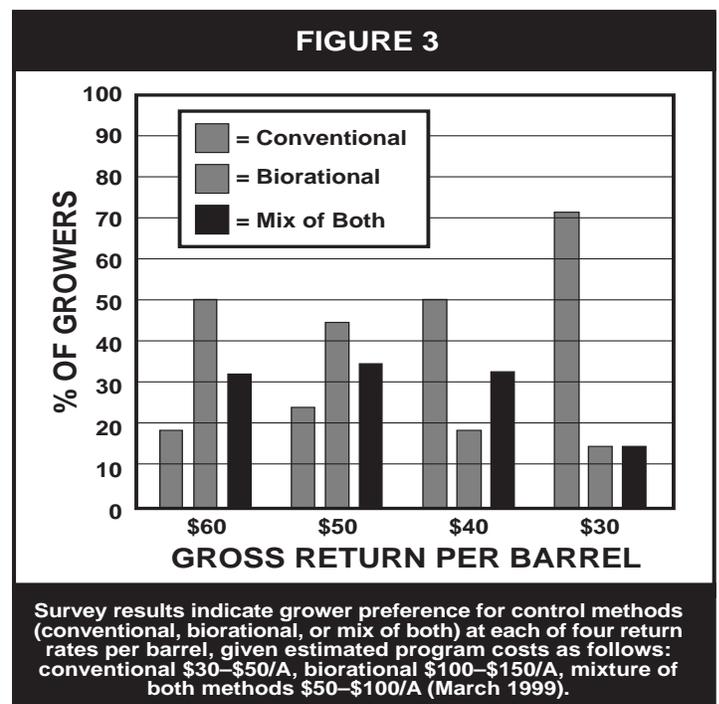
By Dr. Steve Booth, Consultant Entomologist, and Dr. Kim Patten, Horticulturist, WSU

tebufenozide has been granted a Section 3, we had to withdraw our application for a Section 18 for spinosad.

Although we have had good cooperation from corporate registrants (e.g., Rohm and Haas, Dow AgroSciences, 3M Canada) such huge multi-national conglomerates are sometimes reluctant to invest in minor crops, especially if short-term economic futures of the crop are bleak.

Our transition strategy was recently frustrated by a major crash in the cranberry market, caused mostly by overplanting. We surveyed growers to measure, among other things, their willingness to invest in a biorational program to manage BHFV. Results were fairly encouraging (Figure 3), but growers farming at a low or negative return are much less willing to adopt pest management strategies that require extensive monitoring and more expensive materials.

In conclusion, our transition strategy from a conventional to a more integrated and biorational pest management system has been somewhat frustrated by the unpredicted recent economic downturn in the cranberry market. But we have continued to meet our research objectives and adapt them to current realities. This season, we have measured the subtle effects of chemigation and different volumes of wash-off. We have enlisted several grower-cooperators to better demonstrate season-long whole-farm biorational programs in a commercial setting. We are developing preliminary data to better estimate the



economic threshold levels of BHFV. As prices of biorational pesticides decline, the economic outlook for their use improves, and growers become more confident that these programs will work, large-scale implementation will increase. 

Drs. Steve Booth and Kim Patten conduct their research at the WSU Long Beach research and extension unit. They can be reached at (360) 642-2031 or via e-mail at booths@coopext.cahe.wsu.edu or pattenk@coopext.cahe.wsu.edu, respectively.

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Attack on the Male - Part I Are Synthetic Chemicals Guilty of Gender Bias?

Dr. Allan S. Felsot, Environmental Toxicologist, WSU

SEX. Got your attention? The subject seems to have grabbed the nation by the...oh well, you know what I mean. From Monica Lewinsky to worries over disruption of sex hormones by environmental contaminants, everyone is talking about sex. *Bad sex*. What has this to do with pesticides, my usual subject focus? Well, headline news about a year ago proclaimed that sex ratios (the number of males born compared to the number of females) are going down in several developed countries including the United States. And the purported culprit behind this feminization of America? Synthetic chemicals, of course. Among them, pesticides.

Here Come The Hypotheses

A provocative article published in the *Journal of the American Medical Association* (JAMA) observed that the proportion of male births has declined in several industrial countries in the past three decades (1). This decline was touted as a "sentinel health event," defined as "an unusual pattern of health in a population that signals changes in avoidable factors." The avoidable factors are hypothesized to be chemicals known as endocrine disruptors (EDCs, for "endocrine disrupting chemicals"). The list of EDCs, courtesy of the Environmental Defense Fund (<http://www.scorecard.org/health-effects/>) now encompasses 190 chemicals. Included are the usual suspects and a whole lot more: pesticides (30% of total), drugs, dioxins, PCBs (polychlorinated biphenyls), PAHs (polyaromatic hydrocarbons), heavy metals, alkyl phenols (surfactants), plasticizers, dyes, solvents, and fuel. In short, you name it, it's probably on the list or will be shortly.

To give greater credence to the skewing of the sex ratio hypothesis as related to environmental contaminants, the JAMA article cites studies on other male reproductive maladies. Thus, another hypothesis of something terribly wrong is an increasing incidence of

penile malformations known as hypospadias and cryptorchidism, prostrate and testicular cancer, and a trend since the 1950s of a decrease in sperm counts. All of these maladies deserve essays of their own, but my main concern this month is the apparently dwindling number of males.

The Statistics behind the Declining Sex-Ratio Hypothesis

The sex ratio is expressed as the ratio of the number of males born in a given year relative to the number of females. For example, if 106 males are born in a population, but only 100 females, then the sex ratio is 1.06. This ratio can be converted to the proportion of males born by dividing the number of males born by the total number of males plus females born. Thus, in the above example, the proportion of males born is 0.515 (106 males divided by 206 total births).

...the proportion of male births has declined in several industrial countries in the past three decades...

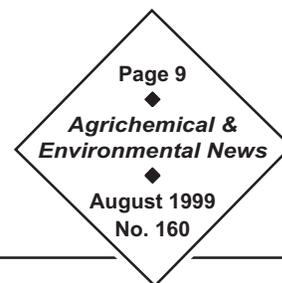
In the United States, the proportion of males dropped from about 0.513 in 1970 to about 0.512 in 1990. This change represents a decline of 0.001, or a loss of one male birth out of every 1000 births. While this decrease in proportion may seem trivial, the JAMA article points out that, over the two decades, this shift accounts for 38,000 births. Similar declines were observed between 1950 and 1994 in Netherlands and Denmark.

Biological Plausibility?

Any linkage made in a wide-ranging epidemiological study purportedly showing a change in some health indicator, whether it be cancer or sex ratios, must have *biological plausibility*. The biological plausibility used by the JAMA article comes from laboratory studies that feed rats environmentally uncharacteristic high doses of a suspected endocrine disrupter and then examine testis weight, prostate weight, and sperm production. The prevailing hypothesis is that

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Gender Bias, cont.



Dr. Allan S. Felsot, Environmental Toxicologist, WSU

exposure to an EDC early in fetal development "imprints rapidly growing reproductive tract cells for later developmental disorders, ranging from testicular cancer to reproductive difficulties" (1).

How might the presence of an EDC in a fetus affect sex ratio? Everyone learned in school that gender is determined by the types of sex chromosomes that the embryo has inherited from his or her parents. Thus, an embryo with two X chromosomes becomes a female, but an X and Y chromosome produces a male. What you learned in school notwithstanding, sex determination is actually more complicated. One hypothesis states that the hormone milieu in the developing fetus actually determines the development of the organs and later physiology that distinguish a male and a female. If the normal hormone mix in the fetus is altered, for example by an EDC that mimics estrogen or inhibits testosterone action, then the tissues supposedly might develop into the sex opposite the one dictated by the genes (2).

No one has proven that this alteration of the fetal hormone mix applies to the human embryo. It has been proven, however, that the gender of reptiles, which is determined by environmental temperatures as much as by chromosomes, can be altered by exposure to a sufficient concentration of certain EDCs (3). For example, turtle eggs incubated at 26°C end up hatching as all males, while eggs at 32°C end up as all females. At 29.2°C, equal numbers of male and female turtles are born. Curiously, for lizards and alligators, the higher temperature results in all males, while the lower temperature causes all females. When turtle eggs incubated at a male-determining temperature are painted with one of the PCB chemicals, the eggs mostly hatch as females.

Another hypothesis holds that the hormonal levels of the parents at the time of conception affect the sex

ratio (4-6). In this hypothesis, higher levels of testosterone in the mother and father result in a greater proportion of male births. Any chemical or condition (for example, certain illnesses) that lowers the testosterone levels at the time of conception result in a preponderance of females. The physiological mechanism for control of sex ratio is still a bit obscure, but a biochemical factor in male semen and an associated enzyme in the female reproductive tract could influence whether a zygote is likely to be male or female (5). This hypothesis leaves the door open to the premise that an EDC could affect the levels of these biochemical factors.

Here Come the Skeptics

Others have examined the declining sex ratio hypothesis in more detail than the JAMA article (7). The JAMA article conveniently left out U.S. sex-ratio data prior to 1970. In 1950, the sex ratio was about the same as in 1970, and it declined until about 1960. In fact, the 1960 sex ratio was lower than in 1970 but steadily rose over the next decade. Considering that acknowledged EDCs like DDT and PCBs were in heavy use between 1950 and the 1970s, it is difficult to understand why the sex ratio would have increased between 1960

and 1970. Furthermore, the level of DDT and other chlorinated contaminants in our bodies has been steadily declining throughout the 1980s and 1990s. Why would sex ratio go down in the 1980s when contamination is going down? (Bear in mind that sex determination is an effect occurring close in time to contaminant exposure. With cancer and fertility problems, adverse effects would not be observed until long after birth.)

The fact of the matter is that sex ratio fluctuates from year to year. The highest U.S. sex-ratio levels were observed between 1940 and 1950 but were different

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How might the presence of an EDC (endocrine disrupting chemical) in a fetus affect sex ratio?

Dr. Allan S. Felsot, Environmental Toxicologist, WSU

each year of that decade. Even the JAMA article shows that the sex ratio declined after 1970, but by 1974, it was back to the 1970 levels. As pointed out in a letter to the JAMA editor, "trends in the sex ratio may depend on the arbitrary choices made in selecting the initial and final years and the actual period in which the births occurred." (8)

Arbitrary selection factors are illustrated well by the following data set. Between 1970 and 1990, the sex ratio for African-Americans actually increased. If the benchmark year had been 1960, the sex ratio trend toward more males would have been more dramatic. The JAMA article neglected to point out this statistic for African-Americans. In addition to ignoring sex ratio data from before 1970, this hypothesis does not account for the fact that synthetic EDCs were around before World War II. Furthermore, not all industrial-

ized countries have been experiencing a declining trend in sex ratios. Australian sex ratios trends have tilted slightly upward between the early 1920's and mid 1990's (8). Are African-Americans and Australians not exposed to the same EDCs as U.S. Caucasians? This drives home the problem with using the U.S. sex ratio as a sentinel indicator of a widespread effect of EDCs on human health.

Reality Check

Historically, at least one pesticide, DBCP (dibromochloropropane), a fumigant that was banned in the late 1970s, has been shown to adversely affect reproduction in production plant workers and also to skew the sex ratio of their offspring (9). Related cases of infertility among production plant workers are well documented. However, applicators of DBCP were not as adversely affected, showing a weak trend for reduction in sperm production only at the highest exposure levels (10). Once a production plant worker or applicator was removed from exposure, reproduc-

tive problems evaporated.

Other occupational exposures have been associated with sex ratios lower than expected, but the association with environmental contamination has only been made for dioxins. During 1976, a chemical plant in Seveso, Italy, exploded and released kilogram quantities of the most toxic dioxin form, TCDD. Such high exposures to TCDD among the general population had been unprecedented. It was noted only recently that the sex ratio of children born within seven years of the explosion was highly skewed to females (11).

Out of 74 total births, 26 were male and 48 female. The ratio returned to normal for children born after 1985. Pertinently, a correlation was noted between parents with extraordinarily high TCDD blood levels and a preponderance of female births. Parents with lower TCDD levels gave birth to a more normal ratio—i.e., a preponderance of males. This story illustrates

...trends in the sex ratio may depend on the arbitrary choices made in selecting the...years in which the births occurred...

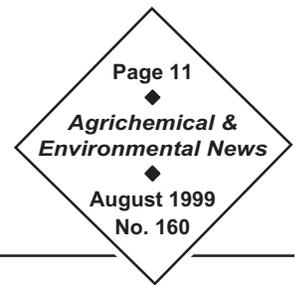
another well known toxicological principle. Biological effects are related to dose as well as timing of an exposure rather than to the mere presence or absence of a contaminant.

Are Sex Ratios Global Health Sentinels?

W. H. James, a long-time student of sex ratio as a biological phenomenon and the progenitor of the hypothesis that the hormonal levels of both parents greatly influence the outcome of birth gender, wrote letters to two journals regarding the JAMA article's hypothesis (12, 13). In each he agreed that individual and specific exposure incidents such as documented for DBCP and observed for TCDD can be useful to examine associations between contaminant exposure and reproductive hazards. But he also maintained that sex ratios are useless as sentinel health indicators in the human population. One reason for this conclusion is that he believes the ups and downs of trends in sex ratio represent a feed back mechanism

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Gender Bias, cont.



Dr. Allan S. Felsot, Environmental Toxicologist, WSU

whereby a population alters its sex ratio in response to current trends. In the case of humans, medical improvements throughout the 20th century have brought about increasing sex ratios, so perhaps the seemingly recent declines are the slight adjustments that bring the ratio back to some biologically optimal level.

In a lighter vein, one critic of the JAMA article pointed out the absurdity of taking the effects of a toxic agent in a specific circumstance as proof for a universal decline in health (14). The writer pointed out that the sex ratio of offspring among fighter pilots is skewed toward girls, perhaps as a result of one parent being subjected to higher than normal gravity forces (i.e., G forces) during acceleration (15). If this hypothesis is correct in this specific subpopulation, then logically there should be a decline in the sex ratio for the whole United States. After all, high-speed elevators, roller coasters, and airplane travel have subjected most people to higher than normal G forces. 

Dr. Allan S. Felsot is an environmental toxicologist with Washington State University. He can be reached at afelsot@tricity.wsu.edu or (509) 372-7365.

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Farm Summit Aim: Establish Research Priorities for Ag Safety

Norm Herdrich, PNASH Outreach Coordinator

Agriculture is recognized as a hazardous occupation nationwide. Because of this, the National Institute of Occupational Health and Safety (NIOSH), using funds from the Centers for Disease Control and Prevention (CDC), set up regional agricultural safety and health centers across the country. In Federal Region 10 (Idaho, Oregon, Washington, and Alaska, the Pacific Northwest) the Pacific Northwest Agricultural Safety and Health Center (PNASH) is housed in the Department of Environmental Medicine at the University of Washington, but is not part of the Department. The Center (PNASH), now in its third year, uses the federal definition of agriculture, which includes forest industries and commercial fishing.

Because Center personnel were most familiar with commercial agriculture, PNASH first concentrated on learning the extent and severity of agricultural health and safety hazards which are largely unknown in the Pacific Northwest region. The major thrust of this effort culminated in a Farm Summit held in January of 1998 in Portland.

In planning the Farm Summit, Center personnel engaged health and safety professionals as well as labor and industry representatives in a dialogue concerning the relative importance of specific hazards. The process got under way when Center personnel met with health and safety professionals at regional conferences to learn their concerns. One of the objectives of these meetings was to establish a regional network of health and safety professionals who can meet periodically to exchange insights and ideas.

The objective of the Farm Summit was hazard identification and determination of a priority ranking of health and safety issues. The summit provided an opportunity for the airing of diverse perspectives, but it also resulted in a relative ranking of hazards.

During the planning phase of the Farm Summit, Center staff agreed that the Summit would serve as a setting to establish an Agricultural and Regional Occupational Research Agenda for the Northwest

(NORA), adapting some of the techniques and criteria of NIOSH's NORA process.

The process included:

- ◆ identifying the range of health and safety concerns among interested and affected parties;
- ◆ engaging in discussion of the technical, social, and economic dimensions of these concerns;
- ◆ understanding the priorities of each of the key interested and affected parties; and
- ◆ establishing a technical advisory group for Center activities.

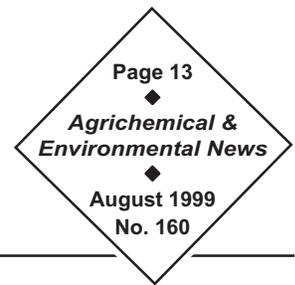
Prior to the summit, the Center identified and contacted appropriate representatives of constituencies (producer groups, labor, academic institutions, public agencies, and health care organizations) who had experience in the area of farming health and safety.

Between November and February 1997, Center staff members conducted phone interviews with 116 constituents. The phone interview consisted of eight questions. Respondents were asked to name the most important health and safety hazards faced by those who work in agriculture in the region/industry. The respondent was then asked to state which of those hazards were most serious in terms of people injured and seriousness of risk. The interview also included questions regarding research directions to address the health hazards, types of training and/or interventions which would also help reduce the risks, and sources of health and safety information. In addition, each respondent was asked for suggestions of other individuals who could provide answers to the phone interview questions. The majority of those people who were recommended were contacted and interviewed.

During the phone interview, respondents were also asked to recommend individuals representing labor, producers, academic institutions, health care organizations, or public agencies for the Farm Summit.

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Farm Summit, cont.



Norm Herdrich, PNASH Outreach Coordinator

These individuals were invited and many subsequently attended the Summit, which was held on March 6, 1998, in Portland, Oregon.

The Summit agenda was designed to solicit participation from attendees and accomplish a number of goals. These included: seeking areas of consensus about key agricultural safety and health problems; involving stakeholders in identifying issues that can be addressed by occupational safety and health research; establishing an occupational safety and health research agenda for agriculture in the Northwest; and identifying individuals who could serve on a technical advisory panel to the Center. During the Summit, it was emphasized that the aim was to develop a research agenda for the region, not specifically for the Northwest Center.

During the meeting, agricultural health and safety hazards were discussed in small group settings. In the morning, participants were separated by constituent groups and asked to prioritize key agricultural health and safety problems, then nominate individuals to serve on an advisory board. In the afternoon, these constituent groups presented their priority lists to the entire group, which were then re-prioritized by all participants. New groups combining constituents were formed and asked to brainstorm solutions and research problems and bring four top recommendations to the entire group. The recommendations were then discussed and each list was voted on by all participants.

The Pacific Northwest Center's Farm Summit was cited in the NIOSH National Occupational Research Agenda publication, *National Occupational Research Agenda Update*, National Institute of Occupational Health, Washington DC, July 1998, as an example of a project which used the National Research Agenda process as a model to conduct a regional hazard priority ranking effort. Other organizations, such as the California Institute for Rural Studies, have subsequently requested further information about the Farm Summit for the planning and implementation of their own regional summit.

PNASH personnel are currently finalizing the Summit proceedings. However, some of the initial data which summarized responses to the initial telephone questions shows that among agricultural groups and organizations, and others constituency groups who attended the Summit, the biggest concern was misuse or improper operation of farm equipment. This included large equipment as well as powered hand tools and shop equipment. Following this category was ergonomic issues such as slips, falls, strains and sprains. Interestingly, problems dealing with agricultural chemicals, including such materials as dairy disinfectants, were well down the list of cited problems. Those less familiar with commercial agriculture were more prone to cite concerns about agricultural chemicals than those people who actually work with the materials.

The Summit proceedings will be disseminated to attendees and individuals who participated in the phone interviews. The proceedings will also be posted on the Pacific Northwest Center's website at <http://depts.washington.edu/pnash/home.htm>.

PNASH personnel are currently in the process of setting up a Forestry Summit to be held February, 2000, in Seattle, Washington. The objective of this summit is to establish a hazard priority ranking for forest workers as well as the sawmill industry and wildland fire fighters. 

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, and Marcy White is the Program Coordinator.

This article was prepared by Norm Herdrich, PNASH Outreach Coordinator. He can be contacted at (509) 926-1704 or normh@u.washington.edu.

Food Safety Conference Focuses on Pathogens

Pesticide Residue Risks All But Ignored as Microorganisms Steal the Show

Sally O'Neal Coates, Editor of Research Publications, WSU

The seventh annual Food Safety Farm to Table Conference was presented May 26 and 27 in Moscow, Idaho, and Pullman, Washington. A project of the Northwest Food Safety Consortium, the conference was sponsored by Washington State University (WSU) Cooperative Extension and University of Idaho (U of I) Cooperative Extension System. Nine of the fifteen presentations at this year's conference focused on matters microbial, while only two ("Heavy Metals, Soils, and Washington's Food Supply" and "Safe Use of Manure and Compost") addressed soil-related concerns more in line with those typically addressed in Agrichemical and Environmental News.

Are naturally occurring pathogens taking the heat off pesticides? Coincidentally, a June press release from the American Council on Science and Health (ACSH) unambiguously titled "Microbes, Not Chemicals, Are the Major Source of Foodborne Illness" quotes University of California professor Dr. Dean O. Cliver as saying, "Reports of recent outbreaks of illness caused by (*E. coli*, various *Salmonella*, and *Listeria monocytogenes*) have demonstrated that microbial hazards are more significant for food safety than are hazards associated with food additives and pesticide residues."

The conference opened with a five-part session entitled **Pathogens du Jour**, chaired by WSU's Dr. Dale Hancock. U of I's Dr. Carolyn Bohach began the session by deconstructing the highly publicized Cornell University study that claimed feeding cattle hay could reduce *E. coli* risks to humans. Her talk, "Will Feeding Cattle Hay Solve the *E. coli* 0157 Problem?" pointed out the weaknesses of Cornell's research and presented U of I research (to be published in July) that drew different, even contrary, conclusions. Referring to the Cornell study, Dr. Hancock observed, "Hypotheses are like backyard chickens—you'd best not get attached to them, because you might have to eat them."

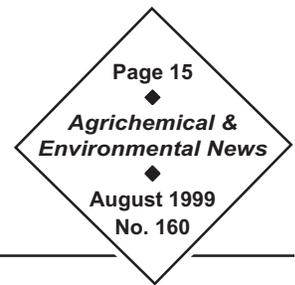
Dr. Truls Nesbakken of the Norwegian Meat Cooperative spoke on the very topical "Control of *Listeria monocytogenes* in the Meat Industry." This highly

publicized pathogen has been connected with ready-to-eat processed meats (e.g., cold cuts) and soft cheeses, grows well despite refrigeration, and poses particular risks to the very young, the elderly, pregnant women, and immune-compromised individuals including alcoholics and diabetics. While *Listeria* can originate in feed and be transmitted via the live animal's skin and feces, Dr. Nesbakken's main focus was transmittal in the slaughter and handling phases. He concluded that Hazard Analysis and Critical Control Point (HACCP) strategies are not enough, and emphasized the importance of thorough cleaning/disinfecting and avoiding cross-contamination. Increased automation helps by reducing operator-to-product contact. Norway has implemented a daily testing program, is researching the addition of lactate and acetate to susceptible product to inhibit *Listeria monocytogenes* growth, and is investigating the success of introducing protective cultures to the processing environment.

After a video from USDA on their risk assessment model for *E. coli* 0157:H7, Dr. Nesbakken returned to the podium to discuss "*Yersinia enterocolitica*: The Bacterium That Came In with the Pig." *Yersinia*, related to the Black Death of the 14th century, is carried primarily on pigs and pork. Most severe outbreaks have occurred in the United States, and symptoms include abdominal pain and diarrhea. Predisposition factors include drinking untreated water, eating sausage and/or pork, and eating raw and/or rare meat. Evidence (albeit indirect) that pigs are carriers include *Yersinia* occurrence correlation with human/pig proximity, the fact that human and porcine strains are identical, and rarity in (non-pork-eating) Moslem countries, as well as case-study and survey data. Farrow-to-finish herds (where pigs are raised from birth to slaughter in the same herd, as opposed to mixing purchased pigs from various sources) show a lower instance of *Yersinia* contamination. Use of plastic bags to contain the pig's rectum immediately upon its removal from the carcass has been shown to reduce contamination significantly. A demonstration video of the bag-and-rectum maneuver was shown to conference attendees—its impact on

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Food Safety Conference, cont.



Sally O'Neal Coates, Editor of Research Publications, WSU

the group's subsequent lunch consumption was not determined.

Brandi Wallace of WSU finished the morning session by discussing "Antimicrobial Resistant *E. coli* in Cattle Feeds." In a 1998 WSU study, 30% of cattle feeds studied were found to be contaminated with *E. coli*. A 1995 study showed presence of Salmonella as well. Recent studies have shown that both *E. coli* and Salmonella can replicate when moisture is added to the feed. Indications are that contaminated feed could transmit pathogens to the cattle, and that some strains are resistant to antibiotic treatment. Wallace's research is ongoing, with no imminent publication scheduled.

Wednesday afternoon's session, moderated by Dr. Val Hillers of WSU, focused on **Effects of Crop and Land Treatments on Safety of Foods**. It began with extension soil scientist Dr. Bob Stevens from WSU's Irrigated Agriculture Research & Extension Center (IAREC) in Prosser presenting "Heavy Metals, Soils, and Washington's Food Supply." Stevens presented background on the public concern regarding heavy metals in Washington state soils, including

- ◆ the February 1997 publication of "Lead in Your French Fries?", a pseudo-scientific paper alleging a slate of ills from heavy metal contamination in fertilizer to a university/regulatory agency cover-up conspiracy;
- ◆ Spring 1997 *Seattle Times* feature articles reporting widespread use of hazardous waste being recycled as fertilizer components; and
- ◆ the February 1999 Food & Drug Administration's market basket survey, which detected lead in carrots produced in Quincy, Washington.

Stevens defined "heavy metals" as arsenic, cadmium, cobalt, mercury, molybdenum, nickel, lead, selenium, and zinc, pointing out that some of these, such as molybdenum and zinc, are required by plants for growth. Many are present at trace levels in our soils

at all times. Metals arrive in the soil through a variety of means; one over which we have some control is fertilizer application. Washington, in part because of the high media attention resulting from the 1997 and 1998 incidents, has taken the lead in establishing fertilizer regulation. (Current information can be found on the Internet at <http://www.wa.gov/agr/>.) Dr. Stevens emphasized that the real concern is not the level of a metal in the soil, so much as the *extractable* amount, or the level available for absorption by the plant. As soil pH is raised, the extractable amount of most metals goes down, therefore liming of soil can inhibit uptake of heavy metals. IAREC scientists are conducting ongoing research in the area of plant uptake. In the meantime, Stevens advised growers to avoid old orchard sites, as the lead arsenate used prior to 1947 can still be present in those soils, and to avoid root crops and leafy vegetables when metals absorption is a concern.

Dr. David Bezdicek of WSU Pullman spoke next on "Safe Use of Manure and Compost," discussing composting operations large and small, including those in Pullman and Lewiston, Idaho. He explained the inherent difficulties in the use of farm manure: it is biologically active, with odors and potential for water contamination; it poses a potential health hazard as a source of bacterial and fungal pathogens, viruses, and parasites; it has poor storage properties; and its handling and loading is regulated. Pathogens can be reduced passively, through aging, or actively, through pasteurization, heat drying, and anaerobic or aerobic digestion. Composted product is more stable, less pathogenic, and easier to handle. Dr. Bezdicek discussed Washington State's Department of Ecology interim standards for compost, and offered some general guidelines to gardeners: wait 60 days before using raw manure, never use manure during the growing season, and use properly treated and cured compost. A spirited discussion ensued about safety, with audience members questioning, among other things, what constituted "clean" compost and whether 60 days was a sufficient waiting period for using manure. Consistent recommendations on these matters have not been finalized among all agencies.

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Food Safety Conference, cont.

Sally O'Neal Coates, Editor of Research Publications, WSU

Jennifer Tebaldi of Washington State's Department of Health (WDOH) wrapped up the day with an enlightening presentation on "Shellfish and Environmental Contaminants." Echoing a fact we've mentioned many times in *Agrichemical and Environmental News*, Tebaldi pointed out that not all environmental contaminants are caused by humans—many are naturally present, including *Vibrio parahaemolyticus*, PSP (Paralytic Shellfish Poisoning), and domoic acid.

Pathogens in shellfish are a particular health concern because

- ◆ shellfish are filter feeders,
- ◆ shellfish can be eaten raw, and
- ◆ the entire animal, including viscera, is often eaten.

Most shellfish diseases are related to the water in which the shellfish live, not the environment in which they are processed. WDOH looks for contamination point sources (farming, wildlife concentration, marinas, human sewage) when considering approval of a shellfish harvest area. Non-point sources are also considered, as are tidal and meteorological conditions. WDOH performs extensive monitoring and testing of sites, and informs the public of conditions, restrictions, and closures. Tebaldi suggested that consumers who enjoy raw shellfish would be prudent to do so during winter months, when fewer pathogens are active.

Day two's morning session "Safety of Retail Products," chaired by WSU's Dr. Richard Dougherty, opened with a presentation by Dr. Terry Dockerty of the National Cattleman's Beef Association on "Meat Products at Retail." Dr. Dockerty reviewed the safety steps to which meat products are subjected before reaching the retail level: inspection by USDA, interventions at the processing level (e.g., hot water or organic acid rinse, chemical dehairing, steam vacuuming, steam pasteurizing, irradiation), and vacuum packaging. Yet many questions remain at the retail level: How stable is the product? How educated are the retail handlers? How inclusive are inspection percentages? Do we need HACCP in retail stores? If so, mandatory or voluntary? Retailers are balancing profit margins with safety,

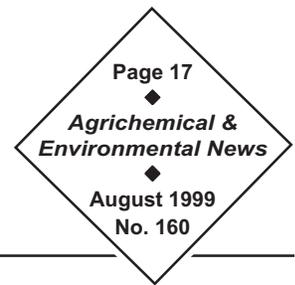
creating an inherent conflict. New types of in-store merchandising (on-site marinating, aging, smoking) create additional hazard potential. The presentation ended with an explanation of current industry safety initiatives.

Janet Anderberg from WDOH offered a lively presentation on "Action in the Deli Case." She discussed the evolution of the grocery store, progressing from an average of 300 items in the 1950s to over 300,000 in today's market. In-store deli offerings have evolved from sliced meats and cheeses to a full array of "HMRs" (Home Meal Replacements) and hot and cold foods. With more variety comes more hazards—more cross-contamination potential, more temperature and preparation variation. Putting this in perspective, of the 457 foodborne illness outbreaks reported in Washington State from 1995 to 1998, 14 (or 3%) were traced to in-store delis. Anderberg outlined specific hazards and pathogens, concluding with the good news that delis can easily apply HACCP concepts and in fact have a good track record for doing so, taking frequent temperature readings, minimizing BHC (bare-hand contact) through use of gloves, and offering good training. The audience also enjoyed Anderberg's humor, use of props, and occasional photos of her daughters mixed in with her slide presentation.

WSU's Dr. Sue Butkus relieved the high-tech problems that had plagued Wednesday's presenters by reverting to a low-tech series of overhead transparencies in her talk, "Allergens? In My Food?" About twenty percent of the population have allergies of some type; less than half of these are food allergies. While about sixteen percent of the population believes they have food allergies, experts estimate only seven to ten percent do. (Six to eight percent of children have food allergies, many of which are outgrown, leaving one to two percent of the adult population affected.) About 160 foods have been identified as true allergens, with 90% of reactions caused by milk, wheat, eggs, soybeans, peanuts, tree nuts, fish, crustacea, and shellfish. Many reactions thought to be allergic are not—strawberries, for example, are high in histamines, and lactose intolerance is not an allergy. Once an individual identifies an allergen, he can avoid the food. Then the

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Food Safety Conference, cont.



Sally O'Neal Coates, Editor of Research Publications, WSU

problem becomes inadvertent exposure—this is where food producers and suppliers come into play. Inadvertent exposure can occur as the result of poor clean-up, incomplete labeling, misformulation, reworking products, and cross-contamination. Those seeking more information can find it online at the website for Food Allergy Resource and Research Program, at <http://foodsci.unl.edu/farrp/farrp.htm>.

The morning session ended with a presentation by attorney William D. Marler, whose office has prosecuted nearly a thousand *E. coli* 0157 cases. With a mixture of black humor and pathos, he told stories from his high-profile case file, including those involving defendants Jack-in-the-Box and Odwalla. His message was clear: those of us in the business of bringing food to the public are in the business of food safety, which is a deadly serious business.

WSU's Dr. Barbara Rasco introduced the afternoon session, "Food Safety Regulations—Benefits, Costs, and Media Impact, which began with Dr. Clark Nardinelli, an economist with the U.S. Food & Drug Administration (FDA) speaking on "Benefits and Costs of Regulating Food Safety." While Dr. Nardinelli's mandate forbade him speaking on specific analyses underway, he explained that costs (defined as value of resources directed toward increasing safety) are always weighed against benefits (defined as value of health effects resulting from the particular safety increase) when FDA considers a regulation. From a governmental perspective, "cost" and "benefit" are measured in hard dollar terms. Simply stated, does it cost more to implement a regulation or treat an illness and its residual effects? The models into which cost/benefit dollars are plugged are not concerned with who pays *which* costs—just the costs themselves, objectively stated. Dr. Nardinelli discussed examples of regulations on iron supplements, seafood, and non-heat-treated fruit and vegetable juices, and stated FDA's intent to improve benefit-cost analyses by improving quality and quantity of data, using models that account for uncertainties, and visiting more food processing sites.

"Impact of Media Coverage on Consumer Risk Perceptions" was presented by WSU's Dr. Jill McCluskey. The gulf between scientifically assessed risk and perceived risk can be wide. The latter affects market demand, and is dramatically influenced by the media. Dr. McCluskey recapped the 1989 Alar scare and the 1996 "mad cow disease" flap. In both cases, facts were distorted and media oversimplification caused a dramatic effect on the associated industries. Using an analysis she had conducted on housing near a lead smelter, Dr. McCluskey demonstrated media's impact on public risk perception.

Dr. Rasco concluded the conference with a discussion of "Food Safety Regulations—Litigant Perspectives and Legal Challenges." Beginning with statistics on the magnitude of foodborne illness in the United States, Dr. Rasco outlined litigant perspectives, shedding light on such phrases as "reasonable expectation" and "fit for consumption" as applicable to food safety. Hazards associated with food can be physical, chemical, or pathological, and product liability applies to the manufacturer, wholesaler, distributor, and retailer. Potential penalties for both civil and criminal suits were outlined. Dr. Rasco pointed out that food processors are held to a higher standard than the general public. When a processor gets sued, it will help its case to have HACCP controls in place, excellent records, and no violations. The presentation concluded with compelling numbers showing how much less costly it is to institute preventative measures than to bear the many costs associated with a lawsuit.

For contact information on any of the speakers at this year's Food Safety Farm to Table Conference, contact conference chair Dr. Richard Dougherty at (509) 335-0972 or dougherty@wsu.edu. General questions about food safety may be addressed to Dr. Dougherty or Dr. Virginia (Val) Hillers, (509) 335-2970 or hillersv@wsu.edu. 

This article was prepared by AENews editor Sally O'Neal Coates, who can be reached in the WSU Tri-Cities Pesticide Information Center, at (509) 372-7378 or scoates@tricity.wsu.edu.

1999 Pesticide Container Recycling Schedule

Washington Pest Consultants Association

Washington Pest Consultants Association organizes an annual series of collection dates and sites for empty pesticide containers. Dates and locations are subject to change; confirm with a telephone call to the number listed in the table before participating. For general questions, or if you are interested in hosting an event at your farm, business, or in a central location in your area, contact Clarke Brown at (509) 965-6809 or Roger Ours at (509) 930-6950.

CONTAINERS MUST MEET THE FOLLOWING CRITERIA:

◆
 Rinsed—no residue remaining • Majority of foil seal removed from spout (small amount remaining on rim OK)

◆
 Clean and dry, inside and out, with no apparent odor

◆
 Hard plastic lids and slip-on lids removed

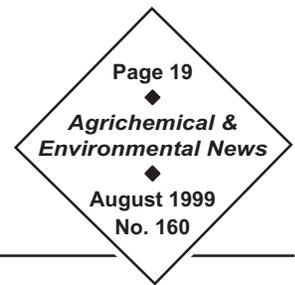
◆
 Half-pint, pint, quart, one and two-and-a-half gallon containers accepted whole

◆
 Five-, 30-, and 55-gallon containers accepted whole if lids and bails removed

DATE	TIME	LOCATION	CONTACT	PHONE
Aug 2	8 am to 10 am	Cenex, Almira	Scott Winona	(509) 632-5645
	11 am to 1 pm	Wilbur Airport	Greg Leyva or Dennis Buddrius	(509) 647-2441 (509) 647-5394
	2 pm to Finished	Davenport Airport	Lee Swain	(509) 725-0011
Aug 3	8 am to 10 am	Western Farm Service, Harrington	Jim Hurst	(509) 253-4311
	1 pm to 3 pm	McGregor's, St. John	Rick Bafus	(509) 648-3218
Aug 4	8 am to 10 am	McGregor's Colfax	Joel Fields	(509) 397-4691
	12 noon to 2 pm	Cascade Flying Service, Garfield	Doran Rogers	(509) 635-1212
	3 pm to Finished	Dale's Flying Service, Palouse	Dale Schoepflin	(509) 878-1531
Aug 5	8 am to 10 am	McGregor's Pullman	Larry Schlenker	(509) 332-2551
	12 noon to 3 pm	Valley Helo Service, Clarkston	James D. Pope	(509) 758-1900
Aug 6	8 am to 10 am	Western Farm Service, Pomeroy	Jerry Wilsey	(509) 843-3491
	12 noon to 2 pm	McGregor's, Waitsburg	Terry Jacoy	(509) 297-4296
Aug 9	8 am to 11 am	Wilbur-Ellis, Eltopia	Vern Record	(509) 297-4291
	12 noon to 2 pm	Pfister Crop Care, Pasco	Steve Pfister	(509) 297-4304
	3 pm to Finished	Air Trac, Pasco	Gerald Titus	(509) 547-5301
Aug 10	8 am to 10 am	Eastern WA Spraying Svc, Eltopia	Willis Maxson	(509) 297-4387
	11 am to 2 pm	B & R Aerial Crop Care, Connell	Chris Eskildsen	(509) 234-7791
	3 pm to Finished	B & R Ag. Chemical, Othello	Larry Hawley	(509) 488-6576
Aug 11	8 am to 12 noon	Othello Airport	Mark Conner	(509) 488-2921
	1 pm to 4 pm	Moses Lake Air Service	Perry Davis	(509) 765-7689
Aug 12	8 am to 12 noon	Wilbur-Ellis, Quincy	Dale Martin	(509) 787-4433
	1 pm to 3 pm	Quincy Flying Service	Richard Weaver	(509) 787-3223
	4 pm to Finished	The Crop Duster, Ephrata	Martin Shaw	(509) 754-3461
Aug 13	8 am to 10 am	Cenex, Royal City	Jerry Wolfkill	(509) 346-2213
	11 am to 1 pm	Saddle Mountain, Royal City	Mike Pack	(509) 346-2291
	2 pm to 4 pm	Wilbur-Ellis, Mattawa	Al Hilliker	(509) 932-4988
Aug 20	8 am to 12 noon	Dept. of Transportation, Ellensburg	Suzanne Tarr	(509) 962-7698
Aug 24	8 am to 11 am	Western Farm Serv, Toppenish	Randy King	(509) 865-2045
Sept 1	8 am to 10 am	NW Wholesale, Chelan	Herb Teas	(509) 662-2141
	11 am to 2 pm	NW Wholesale, Orondo		
Sept 2	8 am to 12 noon	Wenatchee Treefruit Station	Dale Goldy	(509) 884-0711

“Our industry does not want pesticide containers to become a waste issue. If we take the time to clean and recycle these products, we can save money, show that the industry is responsible in its use of pesticides, and reduce inputs to the waste stream.”

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 light-heartedly 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 dearaggie@tricity.wsu.edu. Opinions are Aggie's and do not reflect those of WSU.

Dear Readers:

In reading the June 4, 1999, issue of the Capital Press, I came across the following guest column by Terry Witt, Executive Director of Oregonians for Food & Shelter out of Salem, Oregon. It is reproduced in its entirety. I think perhaps I've found a long-lost cousin in this anonymous Internet author.

—Aggie

June 4, 1999, Capital Press • Reprinted by permission

Organic dentist's reasoning flawed

If you are connected to the Internet, you likely have seen various "chat rooms" where you can find discussions on just about any topic from appendectomies to why zebras have stripes.

The following is a real Internet message from a large apple grower in Michigan. It was written in response to comments made by a dentist from Connecticut (and an organic hobby orchardist) who previously questioned the safety of corporate farm practices, especially the use of pesticides to grow food.

"Subject: Organic Apples

"Dear Doc, I am having trouble understanding your reasoning concerning pesticides on food products. I am hoping you will clarify things for me.

"You are a professional who has been educated and licensed in the field of dentistry. Within your practice you handle all kinds of chemicals such as tooth coatings, anesthetics, glues, various materials used for fillings, and cleansers, all applied directly within a patient's mouth. We aren't talking parts per million here. Of course you say that these things are perfectly safe because they have been approved by the Food and Drug Administration. Certainly a government agency wouldn't allow something unsafe to be used in this manner.

"You also use sharp metal instruments in different patients' mouths throughout the day, which all have the ability to transmit disease such as hepatitis or AIDS, but of course you follow American Medical Association guidelines that ensure me as a patient that there is no danger. And the Center for Disease Control says it is safe. And of course, you are a professional, and well, 'trust me.'

"And yet when another government agency, such as the Environmental Protection Agency, assures you that the pesticide residues found on food are safe, you don't believe them because, well, just because.

"Or when the surgeon general assures you that the pesticide residues in food are safe, you don't believe him because--because why? Even though very strict testing and research guidelines have been undertaken, you still seem to know better than they.

"An overdose of anesthetic will stop all bodily functions and kill the patient, but now really--is dosage all that important? I mean, the proper amount of insulin in the body will regulate blood sugar, but too little or too much will kill you. But is dosage all that important?

"At what point in your education did you stop thinking rationally? You say 'trust me.' Why should we? You use chemicals,

don't you? If a lot of that chemical will harm me, then certainly a little will do the same thing (At least that is what you imply.) Maybe I should be looking for an 'old-timer' who doesn't use as many chemicals in my mouth. He must be safer. And of course those corporate dental offices that have a dozen hygienists can't be getting everything sterile, and they can't be getting everything applied right, and what about the proper dosages? Oops, there's that dosage thing again!

"I suggest that before you begin impugning and degrading the apple industry, you should realize that you and I are exactly the same. I apparently just tend to show more respect for you than you for me. You see, it isn't the corporate farms that I'm scared of, it's the hobbyists. I wouldn't think of going to an apple grower who practices dentistry on the weekends to get a tooth filled. Should I buy apples from a dentist who grows apples on the weekend? Should I trust the dentist? Should I be looking for an organic dentist? With your reasoning, they must be safer for me. I mean, are bacterial infections all that serious a thing?"

(Name Removed)
Hartford, Michigan

Federal Register Excerpts

Jane M. Thomas, Pesticide Notification Network Coordinator

In reviewing the June 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 June 9 Federal Register, EPA published an interim final rule for establishing a voluntary program to verify that state and private organic certifying agencies comply with the requirements prescribed under ISO Guide 65. (Page 30861)

In the June 16 Federal Register, EPA announced the availability of the revised risk assessments and related documents for two organophosphate pesticides, bensulide and profenofos. These documents are available electronically on URL:

<http://www.epa.gov/pesticides/op/status.htm>.

Comments on these documents will be accepted until August 16, 1999. (Page 32229)

In the June 30 Federal Register, EPA announced the availability of the revised risk assessment and related documents for one organophosphate pesticide, sulfotepp. These documents are available electronically on URL:

<http://www.epa.gov/pesticides/op/status.htm>.

Comments on these documents will be accepted until August 30, 1999. (Page 35151)

4th PNW Pesticide Issues Conference

“Threatened & Endangered Species: Pesticide Science, Issues and Policy”

October 19, 1999
Yakima, Washington
8 am – 4 pm

TOPIC AREAS TO INCLUDE

- Understanding the Science •
- Current Issues in the Pac NW •
- A View of the Evolving Policy •

Conference fee approximately \$65, which includes lunch and conference proceedings. Watch next month's issue of *Agrichemical and Environmental News* for details. For more information or a conference brochure, contact Chris Eder at (509) 335-2830 or edercj@wsu.edu, or point your web browser to

<http://pep.wsu.edu/Education/Conference>

PICOL Page Adds Organics Info

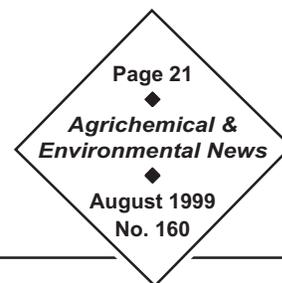
The Pesticide Information Center On-Line (PICOL) website (<http://picol.cahe.wsu.edu>) is now hosting a web page for the Washington State Department of Agriculture (WSDA) Organic Food Program. The page provides detailed information on organic certification and crop production standards, including approved materials (by brand and category), residue standards, application process, resources, and contacts.

The WSDA has certified organic farms since 1988. Its Organic Food Program (OFP) protects consumers and supports the organic food industry by ensuring the integrity of organic food products through establishing organic standards and certifying organic producers, processors, and handlers. The OFP provides technical information about organic food production and assists in the development of markets for the organic food industry.

Those interested in finding out more can call the WSDA at (360) 902-1877, fax them at (360) 902-2087, or e-mail sshillander@agr.wa.gov. But check the web page first—you'll find many answers to the most frequently asked questions.

<http://picol.cahe.wsu.edu>

Tolerance Information



Jane M. Thomas, Pesticide Notification Network Coordinator

Tolerance Information						
Chemical (type)	Federal Register	Tolerance (ppm)	Commodity (raw)	Time-Limited		
				Yes/No	New/Extension	Expiration Date
difenoconazole (fungicide)	6/2/99 page 29581	0.05	eggs	No	N/A	N/A
		0.10	wheat; grain, straw, and forage			
		0.01	milk			
		0.05	fat, meat, and mbp of cattle, goats, hogs, horses, poultry, and sheep			
kresoxim-methyl (fungicide)	6/10/99 page 31129	0.50	pome fruit	No	N/A	N/A
		1.00	grapes			
		0.15	pecans			
		1.00	apple pomace			
		1.50	raisins			
		0.01	mbp of cattle, sheep, and goats			
cytokinins, auxins, gibberellins, ethylene, and pelargonic acid (plant regulator)	6/11/1999 page 31501	exempt	see comment	N/A	N/A	N/A
<p>Comment: This exemption applies when these ingredients are used as plant regulators and applied to plants, seeds, or cuttings and on all food commodities after harvest. It does not apply to residues of these substances that are intended to be produced and used in living plants.</p>						
sulfosate (herbicide)	6/11/99 page 31505	1300*	aspirated grain fractions	No	N/A	N/A
		0.5*	fat of cattle, goats, hogs, horses and sheep			
			6.00 kidney of cattle, goats, hogs, horses and sheep			
			1.50 (except kidney) of cattle, goats, hogs, horses and sheep			
		1*	meat of cattle, goats, hogs, horses and sheep			
			0.10 mbp of poultry			
		1.5*	milk			
		1*	eggs			
		45*	soybean hulls			
		21*	soybean seed			
<p>Comment: Asterisks mark tolerances which are being increased in this action.</p>						
sethoxydim (herbicide)	6/16/99 page 32189	4.00	asparagus	No	N/A	N/A
		1.00	carrot			
		2.00	cranberry			
		4.00	horseradish			
		30.00	peppermint and spearmint tops			
hydrogen peroxide	6/21/99 page 33022	exempt	See comment	N/A	N/A	N/A
<p>Comment: This exemption applies when to all food commodities when hydrogen peroxide is applied/used as an algacide, fungicide, and bactericide at the rate of ≤ 1% hydrogen peroxide per application on growing crops (all food commodities) and postharvest potatoes.</p>						
cyprodinil (fungicide)	6/30/99 page 35032	10.00	caneberries	Yes	New	12/31/00
<p>Comment: This time-limited tolerance is being established in response to EPA granting an emergency exemption for the use of cyprodinil to control gray mold on Washington and Oregon caneberries.</p>						
fludioxonil (fungicide)	6/30/99 page 35037	5.00	caneberries	Yes	New	12/31/00
<p>Comment: This time-limited tolerance is being established in response to EPA granting an emergency exemption for the use of cyprodinil to control gray mold on Washington and Oregon caneberries.</p>						
fludioxonil (fungicide)	6/30/99 page 35070	0.05	flax seed	No	N/A	N/A
		0.01	safflower seed			

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Tolerance Info, cont.

Jane M. Thomas, Pesticide Notification Network Coordinator

Tolerance Information						
Chemical (type)	Federal Register	Tolerance (ppm)	Commodity (raw)	Time-Limited		
				Yes/No	New/Extension	Expiration Date
bifenthrin (insecticide)	6/30/99 page 35051	4.00	cabbage	No	N/A	N/A
		1.00	globe artichoke			
		0.60	brassica; head and stem subgroup, excluding cabbage			
		3.00	corn, forage			
		0.05	sweet corn, kernel plus cob with husk removed			
		0.05	eggplant			
		0.05	pea and bean, succulent shelled subgroup			
		0.05	rapeseed			
		0.40	cucurbit crop group			
		0.60	legume, edible, podded subgroup			
cyfluthrin (insecticide)	6/30/99 page 35058	0.01	potatoes	No	N/A	N/A
		0.01	corn; grain, forage, fodder, field and pop			
		0.05	corn; sweet (K+CWHR)			
		15.00	corn; sweet, fodder			
		30.00	corn; sweet, forage			
paraquat (herbicide)	6/30/99 page 35067	0.30	dry peas	Yes	Extension	11/15/01

Comment: This time-limited tolerance is being extended in response to EPA again granting emergency exemptions for the use of paraquat to desiccate weeds in pea seed and dry peas grown in Idaho, Montana, Oregon, and Washington.

PNN Update

Jane M. Thomas, Pesticide Notification Network Coordinator

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 June.

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

◆ Nichimen America has revised the label for its Kaligreen Potassium Bicarbonate Soluble Powder. The following crops have been added to the label: root and tuber vegetables, leafy vegetables, legume vegetables, fruiting vegetables, cucurbits, pome fruit, stone fruit, small fruits and berries, cereal grains, herbs and spices, hops, ornamentals, and turf (ornamental lawns, golf courses, and sod farms).

◆ Dow has revised the label for its insecticide Lorsban 15G. Bok choy, broccoli raab, and Chinese broccoli have been added to the list of usage sites. In

...continued on next page

Jane M. Thomas, Pesticide Notification Network Coordinator

In addition, Dow has issued a supplemental label for the use of Lorsban 15G for the suppression of cutworms, wireworms, and grubs in alfalfa during the establishment phase.

Manufacturers Use Deletions

◆ PNN Notification 1998-52 reported that EPA was deleting popcorn and carrot uses from technical grade chlorpyrifos labels because EPA had realized that tolerances had never been established for these uses. In the June 18 Federal Register, EPA announced that, effective immediately, popcorn was being deleted from the labels for MicroFlo's Chlorpyrifos 4# AG and Cheminova's Nufos 15G. The following existing stock provision was included in this notice: "The Agency has authorized the registrants to sell or distribute product under the previously approved labeling for a period of 18 months after the effective date of use deletions." **Be aware that while this action allows for the purchase of MicroFlo's Chlorpyrifos 4# AG and Cheminova's Nufos 15G labeled for use on popcorn, no tolerance exists for this use.**

◆ In the June 23 Federal Register, EPA announced that it had received a request from Monsanto to delete aerial application use directions from the label for its Partner WDG Herbicide. Unless this request is withdrawn by December 20, 1999, EPA will approve this deletion.

◆ In the June 23 Federal Register, EPA announced that it had received a request from Gowan to delete the following uses from the label for its Endosulfan 3EC: alfalfa grown for forage, safflower, sugarbeet, sunflower, and peas grown for seed. Unless this request is withdrawn by December 20, 1999, EPA will approve these deletions.

Manufacturers Product Cancellations

◆ In the May 26 Federal Register, EPA announced that it had received a request from Prentiss Inc. to cancel its registrations for Prentox Lindane 20% EC and Prentox 20 Lindane. Unless these requests are withdrawn by November 22, 1999, EPA will issue

orders canceling these registrations. The PNN-related usage sites for each product are:

Prentox Lindane 20% EC: apple, beef cattle, bulb, cherry, conifer, deciduous/shade tree, flower, goat, horse, non-dairy livestock building, peach, rose, sheep, shrub, swine, tomato, and turf.

Prentox 20 Lindane: apple, bulb, cabbage, celery, cherry, collard, cucumber, deciduous/shade tree, evergreen tree, lettuce, melon, okra, ornamental, peach, pepper, plum, squash, and tomato.

◆ In the May 26 Federal Register, EPA announced that it had received a request from Rohm & Haas to cancel its registration for Kelthane 35. Unless this request is withdrawn by November 22, 1999, EPA will issue orders canceling this registration. Kelthane 35 is labeled for use on the following PNN-related sites: apple, crabapple, cucurbit, flower, grape, greenhouse ornamental, nursery, ornamental, ornamental tree, pear, quince, strawberry, and turf. Rohm & Haas has also requested that SLN WA-900022, which provides for the use of Kelthane 35 on blackberry and raspberry crops, be cancelled.

◆ In the May 26 Federal Register, EPA announced that it had received a request from Platte to cancel its registration for Dicofol 4EC. Unless this request is withdrawn by November 22, 1999, EPA will issue orders canceling this registration. Dicofol 4EC is labeled for use on the following PNN-related sites: apple, bean, crabapple, cucurbit, filbert, flower, grape, hop, mint, nursery, ornamental, pear, pepper, strawberry, tomato, turf, and walnut.

Section 18 Specific Exemptions

Σ On June 18 EPA granted a specific exemption, 99-WA-44, for the use of Pirimor 50-DF to control aphids on various vegetable seed crops. (A copy of this exemption is available on the web. See URL: <http://www.tricity.wsu.edu/~mantone/sect18/1999wsec.html>). This exemption provides for the

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Jane M. Thomas, Pesticide Notification Network Coordinator

following:

- ◆ two applications,
- ◆ use on 6,000 acres, and
- ◆ an expiration date of 9/15/99.

◆ On June 24 EPA issued a Section 18 specific exemption, 99-WA-13, for the use of Novartis' Flint to control powdery mildew on hops. (A copy of this exemption is available on the web. See URL: <http://www.tricity.wsu.edu/~mantone/sect18/1999wsec.html>). This exemption provides for:

- ◆ a maximum of four applications,
- ◆ a 14-day PHI, and
- ◆ an expiration date of 9/22/99.

Supplemental Labels and Use Recommendations

◆ Dow has issued supplemental labels providing for additional uses for several of its products. Each is listed below::

Curtail: Postemergence broadleaf weed control in field corn.

Treflan EC Weed and Grass Preventer: Weed control in cottonwood trees grown for pulp.

Stinger: Weed control in cottonwood/poplar trees grown for pulp.

Treflan MTF: Weed control in potatoes.

Garlon 3A and Garlon 4: Forestry uses.

◆ Du Pont has issued supplemental labels for two of its herbicides. These are:

Assure II - Use for postemergence grass control in mint

Velpar L - For use on highbush blueberries.

Miscellaneous Regulatory Information

◆ In the June 3 Federal Register, EPA announced that the Agency is soliciting comments on the Reregistration Eligibility Decision (RED) for chlorothalonil. Chlorothalonil is the active ingredient in 96 products currently registered in Washington. These include both products for commercial use as well as those intended for homeowner use. Both the complete RED and the Fact Sheet are available on EPA's web site at the following URL: <http://www.epa.gov/oppsrrd1/REDS/>.

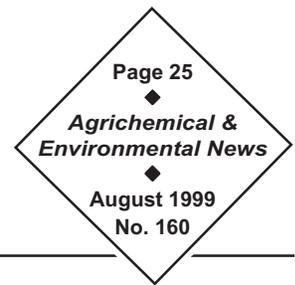
The major provisions contained in the RED are:

◆ To address the carcinogenic dietary risk from hexachlorobenzene (HCB), a common impurity in chlorothalonil, the level of HCB in chlorothalonil technical and manufacturing-use products will be reduced, via a series of interim decreases, to 40 ppm by January 1, 2003.

◆ To protect occupational handlers of pesticides containing chlorothalonil:

- 1) wettable powder formulations must be packaged in water soluble bags or labeled for use only in closed mixing/loading systems,
- 2) handlers of granular formulations applied with tractor drawn spreaders to turf must wear dust masks,
- 3) applicators using specialty air-assisted application equipment on turf must wear chemical-resistant gloves,
- 4) painters using airless sprayers should wear respirators,
- 5) workers who reenter treated areas after the restricted-entry interval but within 7 days of treatment must receive special notification about eye irritation hazards and have access to on-site eye-flushing equipment,

PNN Update, cont.



Jane M. Thomas, Pesticide Notification Network Coordinator

6) handlers of wettable powder, liquid flowable, and dry flowable formulations, and those using hand-held equipment (such as backpack sprayers) must wear gloves, and

7) handlers in enclosed spaces (greenhouses) must wear respirators.

◆ To protect residential handlers and children: products containing chlorothalonil are prohibited for use on home lawns.

◆ To protect workers: sod treated with chlorothalonil must be harvested, rolled, and palletized mechanically.

◆ To address risk concerns and uncertainties about exposure from specialty products: chlorothalonil mildewicidal additives must be labeled to prohibit sale over-the-counter at retail outlets and the in-container preservative use of chlorothalonil will be discontinued.

◆ Smoke generator formulations are to be designated as Restricted Use Pesticides.

◆ To protect wildlife, the individual and seasonal maximum application rates for many use sites are being reduced. For a table of these rates, refer to Chapter IV of the chlorothalonil RED (see pages 168 and 169 of the RED). In addition, untreated buffers are required between estuarine/marine water bodies and agricultural crops treated with chlorothalonil: at least 150 feet for aerial and air-blast applications and 25 feet for ground applications.

State Issues

New Registrations

◆ WSDA has registered Tomen Agro's Elevate 50 WDG for use. This fenhexamid fungicide is labeled for use to control Botrytis diseases on grapes and strawberries.

◆ WSDA has registered BASF's Sovran Fungicide

for use. This kresoxim-methyl fungicide is labeled for use on apple, pear, quince, crabapple, oriental pear, and grape.

◆ WSDA has registered American Cyanamid's Imazapic Herbicide Applicators Concentrate. The main label and the associated supplemental label provide directions for use on the following PNN-related sites: CRP lands, turf, and ditch banks.

◆ WSDA has registered Drexel's Diuron DP. This herbicide is labeled for use on the following PNN-related sites: alfalfa, apple, asparagus, barley, birdsfoot trefoil, blackberry, blueberry, boysenberry, bulb, dewberry, field corn, gooseberry, grape, grass seed crop, loganberry, mint, oat, pasture, peach, pear, raspberry, red clover, wheat, and youngberry.

◆ WSDA has registered two Aspen Vet Resources insecticides. The products, their active ingredients and labeled usage site are:

Ectozap Dual Action (permethrin, piperonyl butoxide): Agricultural production building, beef cattle, dairy cattle, dairy building, non-dairy livestock building, sheep, and poultry building/yard.

Ectozap Pour-On Insecticide (permethrin): beef cattle, dairy cattle, and sheep.

◆ WSDA has registered Zeneca's Warrior T Insecticide for use. This product is labeled for use on the following crops: alfalfa, alfalfa seed crop, broccoli, Brussels sprout, cabbage, cauliflower, Chinese broccoli, Chinese cabbage, Chinese mustard, corn seed crop, dry bulb onion, field corn, garlic, kohlrabi, lettuce, popcorn, sorghum, soybean, sunflower, sweet corn, tomato, triticale, and wheat.

◆ WSDA has registered Zeneca's Touchdown 5 Herbicide for use. This product is labeled for use on the following crops: apricot, cherry, chestnut, conservation reserve program, corn seed crop, fallow land, farm building area around, fencerow, field corn, filbert,

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Jane M. Thomas, Pesticide Notification Network Coordinator

grape, kiwi nonbearing, nectarine, non-bearing apple, non-bearing apricot, non-bearing asparagus, non-bearing berry, non-bearing cherry, non-bearing cranberry, non-bearing filbert, non-bearing grape, non-bearing nectarine, non-bearing peach, non-bearing pear, non-bearing plum, non-bearing prune, non-bearing walnut, nonbearing ginseng, noncrop agricultural area, orchard floor, peach, plum, popcorn, prune, soybean, and walnut.

◆ WSDA has registered Valent's Distance Insect Growth Regulator. This product is registered for use on the following crops: greenhouse flower, greenhouse ornamental, greenhouse shrub, non-bearing apple, non-bearing apricot, non-bearing cherry, non-bearing crabapple, non-bearing filbert, non-bearing nectarine, non-bearing peach, non-bearing plum, non-bearing prune, non-bearing walnut, ornamental ground cover, shrub, ornamentals, non-bearing chestnut, nonbearing pear, non-bearing quince, and ornamental tree.

◆ WSDA has registered Valent's Select 2EC for use. The product is labeled for use on the following crops and sites: asphalt/cement, building adjacent area, dry bulb onion, fallow land, fencerow, garlic, golf course, greenhouse, industrial site, non-bearing apple, non-bearing berry, non-bearing cherry, non-bearing filbert, non-bearing grape, non-bearing peach, non-bearing pear, non-bearing plum, non-bearing prune, non-bearing strawberry, non-bearing walnut, noncrop non-agricultural area, railroad right-of-way, right-of-way, roadside right-of-way, shallot, soybean, sugarbeet, non-bearing nectarine, non-bearing chestnut, utility right-of-way, and recreation area.

In addition, Valent has issued several supplemental labels and product bulletins to cover:

use on tomatoes; alfalfa (including sainfoin, holy clover, birdsfoot trefoil) grown for seed, forage, hay; and dry beans;

additional tank mix, application, and weed information;

two-way tank mix directions with Basagran for weed control in dry beans;

two-way tank mix directions with Pursuit for weed control in alfalfa; and

two-way tank mix directions with Butracil for weed control in seedling alfalfa.

◆ WSDA has registered Diatect's Multipurpose Insecticide II for use. This product is labeled for use on the following crops and usage sites: agricultural production building, alfalfa, animal quarters, apple, apricot, artichoke, asparagus, barley, bean, beet, birdsfoot trefoil, blackberry, blueberry, boysenberry, broccoli, Brussels sprout, buckwheat, bulb, cabbage, carrot, cauliflower, celery, cherry, chickpea, Chinese broccoli, Chinese cabbage, clover, collard, conifer, corn, cowpea, crabapple, cranberry, cropland, cucumber, currant, dairy building, dandelion, dewberry, dill, eggplant, elderberry, endive, farm building, fennel, filbert, garlic, ginseng, golf course, gooseberry, grape, grass, grass hay, greenhouse bean, greenhouse bulb, greenhouse celery, greenhouse cole crop, greenhouse conifer, greenhouse cucumber, greenhouse endive, greenhouse lettuce, greenhouse ornamental, greenhouse pepper, greenhouse tomato, greenhouse watercress, herb, hop, horseradish, kale, kiwifruits, kohlrabi, lawn, leek, lentil, lettuce, loganberry, millet, mint, mushroom, mushroom house, mustard, nectarine, oat, okra, olallieberry, onion, ornamental, parsley, parsnip, pea, peach, pear, pepper, plum, potato, poultry building/yard, prune, quince, radish, rangeland, raspberry, rhubarb, rose, rutabaga, rye, salsify, sorghum, soybean, spinach, stored fruit and vegetable, stored grain, strawberry, sugarbeet, sunflower, sweet potato, Swiss chard, tomatillo, tomato, triticale, turf, turnip, vetch, walnut, watermelon, wheat, yam, and youngberry.

Section 18 Crisis Exemptions

◆ On June 16 WSDA took two actions regarding an earlier request for a Section 18 exemption for the use of Elevate 50WDG and Switch 62.5WG on strawber-

...continued on next page

Jane M. Thomas, Pesticide Notification Network Coordinator

ries. First, WSDA withdrew the request for the use of Elevate 50WDG because the Section 3 label for this product has been revised and now includes directions for use on strawberries. At the same time WSDA also cancelled the Section 18 crisis exemption that they had previously granted for the use of Switch 62.5WG. When issued, this exemption contained a provision that the exemption would expire as soon as Elevate became available for use. Elevate is now available therefore the crisis exemption for the use of Switch on strawberries has expired.

Section 24c Registrations

◆ On May 21 WSDA issued an SLN, WA-990023, for the use of Novartis' Dual Magnum Herbicide to control yellow nutsedge, grass, and broadleaf weeds in dry bulb onions. This SLN expires 12/31/04.

◆ WSDA has issued the following SLNs for insecticide use on hybrid poplars grown for pulp:

1) WA-990024 provides for the use of Zeneca's Warrior T Insecticide to control aphids, beetles, cutworms, spotted tentiform leafminers and tarnished plant bugs. This SLN carries a 12/31/03 expiration date.

2) WA-990025 provides for the use of Gowan's Endosulfan 3EC for the control of eriophyid mites. This SLN expires a year later on 12/31/04.

◆ On June 6 WSDA issued an SLN, WA-990026, to Uniroyal for the use of its insect growth regulator Dimilin 2L, to control grasshoppers and Mormon crickets on rangeland and non-crop areas. This SLN expires 12/31/03.

◆ On June 17 WSDA issued an SLN, WA-990027, to Dow AgroSciences for the use of its herbicide Starane to control bedstraw in grass seed crops. This SLN expires 12/31/99.

Section 24c Cancellations

◆ WSDA has cancelled SLN WA-980024. This SLN

was previously issued to provide for preharvest use of BASF's Clarity Herbicide on wheat. The cancellation was requested by BASF because this use has been added to the Section 3 label.

◆ On June 2 WSDA issued a letter canceling SLN WA-900035. This SLN had previously been issued to Novartis for the use of its fungicide Apron 35SD to control downy mildew and some soil borne diseases on pea seed grown for export. The SLN is being cancelled at the request of Novartis because the company no longer markets this product.

Section 24c Revisions

◆ WSDA has issued a revision to SLN WA-980025. This SLN, previously issued for the use of Platte's Supreme Oil on hops, has had the expiration date revised to 12/31/04.

◆ On May 21 WSDA issued revisions to two SLNs: WA-980017 and WA-980012. These SLN had previously been issued to Drexel for the use of its Endosulfan 3EC for: Chemigation use on potatoes (WA-980017) and for use to control spotted alfalfa aphid in alfalfa seed crops (WA-980012). Both SLNs have had an aquatic toxicity statement added and the expiration date changed to 12/31/04.

◆ On May 21 WSDA issued a revision to SLN WA-890011. This SLN had previously been issued to Drexel for the use of its Diuron 4L for weed control in established perennial bluegrass grown for seed. The revision changes the expiration date to 12/31/04.

◆ WSDA has revised two SLNs. SLN WA-950032, previously issued to MicroFlo for the use of Endosulfan 3EC on canola has had a 12/31/03 expiration date added to the label. SLN WA-950033 for the use of Novartis' Tilt on grasses grown for seed has had a 12/31/04 expiration date added.

◆ On May 26 WSDA issued a revision to SLN WA-960006. This SLN had previously been issued to Elf Atochem for the use of Aquathol K Aquatic Herbicide to control Eurasian milfoil on quiescent or moving

Jane M. Thomas, Pesticide Notification Network Coordinator

water. The revisions include changing the expiration date to 12/31/03.

◆ On June 10 WSDA issued a revision to SLN WA-980028. This SLN had previously been issued to MicroFlo for the use of its Endosulfan 3EC on potatoes to control Colorado potato beetle, armyworms, and aphids. The revision adds an aquatic toxicity statement and changes the expiration date to 12/31/03.

◆ On June 10 WSDA issued a revision to SLN WA-980027. This SLN had previously been issued to MicroFlo for the use of its Endosulfan 3EC on alfalfa seed crops to control spotted alfalfa aphid. The revision changes the use rate, adds an aquatic toxicity statement, and changes the expiration date to 12/31/03.

◆ On June 10 WSDA issued a revision to SLN WA-990015. This SLN had previously been issued to Dow for the use of its Lorsban 4E on perennial grass seed crops to control billbugs, cutworms, and aphids. The revisions include limiting the usage to the establishment year only, prohibiting any use of the treated crop for animal feed, and restricting the harvest to 365 days after the application. These changes are intended to make the crop a "nonfood/nonfeed" crop (for the purpose of this SLN only) so that no chlorpyrifos tolerance is required for this use.

Miscellaneous Regulatory Information

◆ On June 4, responding to a request made by MicroFlo, WSDA issued correspondence immediately canceling the registration for MicroFlo's insecticide Azinphosmethyl 50W. The cancellation requires that dealers/distributors immediately stop selling MicroFlo's Azinphosmethyl 50W (EPA registration number 51036-164). This product is currently labeled for use on the following PNN-related sites: apple, apricot, artichoke, barley, bean, blackberry, boysenberry, broccoli, Brussels sprout, cabbage, cauliflower, celery, cherry, Chinese cabbage, Christmas tree plantation, crabapple, cranberry, cucumber, deciduous/shade tree, eggplant, filbert, forest-related sites,

grape, loganberry, melon, nectarine, nursery, oat, onion, ornamental, peach, pear, pepper, plum, potato, prune, quince, raspberry, rye, soybean, spinach, strawberry, tomato, walnut, and wheat.

The cancellation is in response to recent discussions among EPA, industry, and public interest groups regarding azinphos methyl. As a result, an agreement has been reached to convert all azinphos methyl products to water-soluble bags and to relabel existing water-soluble bag formulations with additional worker risk mitigation language. MicroFlo is immediately implementing these measures by recalling all existing MicroFlo azinphos methyl products currently in the channels of trade. To this end MicroFlo is asking all distributors to:

- 1) Return all Azinphosmethyl 50W product in open-top bags to MicroFlo.
- 2) Return all Azinphosmethyl 50W Soluble product already in water-soluble bags to Inland Empire for relabeling.
- 3) Contact dealer customers and request that they stop selling or distributing any Azinphosmethyl 50W product and return any unsold product.

In addition, MicroFlo has just finished registering its water-soluble formulation, Azinphosmethyl 50W Soluble (EPA registration number 51036-164) in Washington. This product is intended to replace not only the Azinphosmethyl 50W but also the other water-soluble formulation, Azinphosmethyl 50W Soluble (EPA registration number 51036-205) that carries outdated labeling and is in discontinuance. The new Azinphosmethyl 50W Soluble is labeled for use on essentially the same list of crops and usage sites given above.

