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"IN THIS ISSUE"

TOXICOLOGY TIDBITS

DPR Releases Data on 1999 Pesticide Injuries

The California Department of Pesticide Regulation (DPR) has released a summary of pesticide injury data for 1999. As part of the California Environmental Protection Agency, DPR collects and analyzes this data to identify illness trends and make improvements to protect workers and the public.

DPR identified a total of 1,201 suspected or confirmed reports of pesticide injury in 1999, compared to 998 cases the previous year. Other than 1998, the total number of illnesses reported in 1999 was the lowest since 1986. (DPR statistics are based on investigations of every potential pesticide injury identified by local and state authorities.)

Pesticide drift exposures were identified in 570 cases -- the most frequent factor in 1999 injury reports. And most of the total increase from 1998 to 1999 could be attributed to a single drift incident in the Tulare County town of Earlimart.

Data collected by the Pesticide Illness Surveillance Program has played a role in several DPR actions against drift, including:

* A record, $150,000 penalty for a November, 1999 drift incident involving a metam-sodium fumigation in a farm field near Earlimart neighborhoods. About 170 people were affected. DPR's legal settlement with the applicator included $75,000 for medical monitoring.

* New DPR policies to ensure thorough drift investigations and encourage drift prevention measures. Toward that goal, DPR and the county agricultural commissioners have held meetings with interested parties -- including applicators and environmental advocates -- to discuss better drift prevention regulations.

* A survey to evaluate sulfur drift complaints and determine application problems. In response to DPR and county agricultural commissioner concerns, sulfur manufacturers have issued use guidelines to promote safer applications. Commissioners also are focusing on sulfur drift prevention in their continuing education classes for applicators.

The 1999 illness data detailed agricultural-related reports (555 cases, or 46 percent) and non-agricultural reports (646 cases, 54 percent). Occupational exposures accounted for 804 (67 percent) of reports. Pesticides include not only insecticides, herbicides, and fungicides, but also disinfectants, sanitizers, and other chemicals that kill pests. More than 1 million farm and commercial pesticide applications are made annually in California.

Agricultural field worker injuries declined to 134 in 1999, compared to 170 the previous year. DPR's Worker Health and Safety Branch helped investigate two incidents that involved worker reentry into fields treated with pesticides.

In a Fresno County incident, seven grape harvesters received medical treatment for skin irritation and flu-like symptoms after entering a vineyard. Investigation subsequently showed that a pesticide not registered for use on grapes had been applied at an extremely high rate. The Fresno County Agricultural Commissioner determined that the pesticide, cyhalothrin, was delivered to the field in error and workers had applied the chemical without consulting their supervisors. The applicator and pesticide dealer were fined $1,000 each, and workers were not allowed back into the vineyard for an extended period.

The second incident occurred in a Kern County cotton field, where a work crew reentered the site about five hours after it was treated with tribufos and sodium chlorate. Reentry should have been prohibited for 24 hours. Seven workers subsequently sought medical treatment and five have had ongoing health problems. The Kern County Agricultural Commissioner identified several violations and issued civil penalties of more than $5,000 against the applicator and grower.

In response to such incidents, DPR has initiated an in-depth review of field posting (warning sign) regulations, illnesses related to early reentry, and pesticide use related to posting. DPR has also met with industry and worker advocacy groups to discuss the effectiveness of current regulations. Later this year, DPR's Worker Health and Safety Branch plans to make recommendations to enhance safety rules.

Other details from the 1999 data included:

* Four fatalities linked to pesticide exposure. In Los Angeles County, a worker was killed in an explosion at a facility that ripened bananas with ethylene gas, which is classified as a pesticide. Two persons died from pesticide ingestion;

one was considered a suicide (Los Angeles County) and the second could not be determined (Ventura County). The fourth victim died after entering a structure during fumigation (Los Angeles County).

* Children's injuries linked to carelessness. In separate incidents, two children were hospitalized after they came in contact with pesticides poured into soft drink containers. Two other children received serious injuries due to unattended pesticide containers. A total of 63 cases involved children aged ten or younger. DPR reminds the public to store pesticides in a safe place, and never transfer pesticides into food containers.

* Illness investigations increased. DPR and the county agricultural commissioners -- who act as primary illness investigators -- reported a 10 percent increase in the number of cases reviewed from 1998 to 1999. As part of an ongoing effort to improve illness reporting, DPR enlisted help from poison control centers to encourage doctors and others to report pesticide incidents. State law requires physicians to report any suspected pesticide illness.

The 1999 pesticide illness data summary may be found on DPR's Web site at http://www.cdpr.ca.gov/docs/dprdocs/pisp/1999pisp.htm.

(Note: A numerical summary of 1999 pesticide illness data by county are available by linking to the online version of this release at http://www.cdpr.ca.gov/docs/pressrls/presmenu.htm, or by calling 916/445-3974 to have a copy faxed to you.)

REF: *California Department of Pesticide Regulation News Release,* February 15, 2001.

DPR approves 22 new chemicals; 9 are reduced-risk

The California Department of Pesticide Regulation (DPR) registered 22 new pesticide active ingredients in 2000, including nine formally designated as reduced-risk chemicals. DPR is part of the California Environmental Protection Agency.

Reduced-risk chemicals typically offer less toxicity, allow lower application rates, or feature other desirable qualities compared to traditional pesticides. The new, reduced-risk chemicals include three pheromone treatments to protect fruits and vegetables from worms. Pheromone treatments disrupt mating by mimicking pest scents.

To expedite registration of reduced-risk products, DPR evaluates them concurrently with reviews by the U.S. Environmental Protection Agency. (Pesticides approved by U.S. EPA must also meet stringent California standards.)

DPR also expanded its registration staff in 2000, giving priority to reduced-risk pesticide registrations while reducing an overall registration backlog by about 50 percent.

Other new active ingredients registered by DPR in 2000 included insect repellents, home disinfectants, and roach baits. (An active ingredient is the specific chemical in a pesticide product that kills or otherwise controls target pests. "Pesticide" is an umbrella term that includes not only insecticides, herbicides, and fungicides, but also disinfectants, sanitizers, and other similar chemicals that kill pests.)

Effective this July 1, certain structural pest control devices also must be registered with DPR. Such devices typically utilize heat, microwave, or electrical treatments.

In addition to expanded staffing, DPR's Registration Branch has undertaken several efforts to better serve the regulated community, including an online desk manual with details of the registration process <www.cdpr.ca.gov/docs/registration/regmenu.htm>.

The branch also formed a joint DPR-industry workgroup to streamline registration efforts. One proposal has prompted plans later this year to provide e-mail notifications for registrants as their products move through the evaluation process.

California has 909 pesticide active ingredients currently registered, used in approximately 11,564 pesticide products. One of six boards and departments within Cal/EPA, DPR regulates the sale and use of pesticides to protect human health and the environment.

For a chart listing active ingredients registered in 2000, see the news release posted on DPR's Web site www.cdpr.ca.gov or call the number listed below to receive the chart by fax.

REF: *California Department of Pesticide Regulation*, News Release (01-02), January 26, 2001.

National database of drug residues released for FY 2000

Figures from the milk drug residue database for fiscal 2000 show that the overall amount of samples testing positive for residues declined slightly from the previous fiscal year. The National Milk Residue Database is a voluntary industry reporting program.

This year's report looks at the testing results from Oct. 1, 1999, to Sept. 30, 2000. During that period, about 4.4 million tests were analyzed for animal drug residues, and 3,715 tested positive for a residue. In the previous fiscal year (Oct. 1, 1998, to Sept. 30, 1999), the database showed that about 4.2 million samples were analyzed, and 4,270 samples (about 0.1%) tested positive.

The percentage of samples testing positive from bulk milk pickup tankers and producers declined slightly. However, positive samples from pasteurized fluid milk and other sources increased slightly.

For more information link to: http://vm.cfsan.fda.gov

Pulling the Plug on POPs

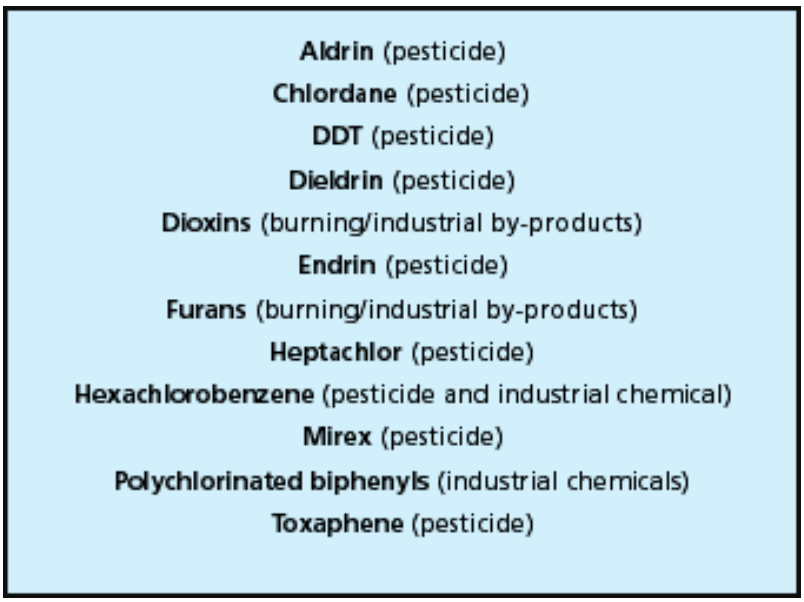
Officials from the United Nations announced on 10 December 2000 that representatives from 122 countries have agreed on the text of a treaty banning or sharply restricting the use of 12 highly toxic chemicals known as persistent organic pollutants (POPs). The treaty will be formally adopted during a diplomatic conference in Stockholm, Sweden, to be held 22-23 May 2001. After this, governments will ratify the treaty. The treaty will go into force once 50 nations have ratified it, a process estimated to take 3-5 years.

POPs travel easily through the environment and break down slowly. They have been linked with cancer, allergies, central and peripheral nervous system damage, immune disorders, birth defects, and other adverse effects, and can be transferred from mother to child through breast-feeding. In a 10 December 2000 press release by the United Nations

Environment Programme, which organized the talks, session chairman John Buccini said, "Persistent organic pollutants threaten the health and well-being of humans and wildlife in every region of the world. This new treaty will protect present and future generations from the cancers, birth defects, and other tragedies caused by POPs."

The six-day session was held in Johannesburg, South Africa. It was the fifth time that diplomats met to work on guidelines for addressing POPs pollution at an international level. The treaty establishes control measures for the production, import, export, disposal, and use of an initial list of 12 highly toxic POPs, the so-called "dirty dozen." Eight of the chemicals may no longer be produced or used once the treaty goes into effect.

POPs To Go



Exceptions have been granted for DDT, polychlorinated biphenyls (PCBs), dioxins, and furans. Until safer solutions can be developed, DDT may still be used in certain nations to combat malaria-carrying mosquitoes. PCBs will still be around in the form of electrical equipment such as transformers, which benefit from the chemicals' excellent dielectric properties. Governments will have until 2025 to arrange for PCB-free replacements. Finally, because dioxins and furans are unintentional by-products of burning and industrial processes, they are harder to control. Governments are therefore being asked to reduce their releases with an eye toward eventually eliminating them altogether.

The treaty is intended to be a flexible policy tool that can be expanded and updated in the future as needed. A POPs Review Committee will regularly consider other POPs candidates for control to ensure that the treaty reflects the state of the science.

REF: *Environmental Health Perspectives*, 109(1), January 2001.

Unintentional-Injury Facts

Summary and Trends

Unintentional-injury deaths were unchanged in 1998 compared to the revised 1997 total. Unintentional-injury deaths were estimated to total 92,200 in both 1997 and 1998, down 3% from the final 1996 count of 94,948. The 1998 figure is 6% greater than the 1992 total of 86,777 (the lowest annual total since 1924) but 21% below the 1969 peak of 116,385.

The steady death toll combined with continuing growth in the population meant that the death rate in 1998 was the second lowest on record -- 34.1 unintentional-injury deaths per 100,000 population. The lowest rate was 34.0 in 1992.

More than 8.3 million people have died from unintentional injuries since the National Safety Council was founded in 1912. If the death rate had not been reduced over the past 87 years from 82.5 per 100,000 population to its present level, then almost 4.2 million more people would have died prematurely from unintentional injuries.

Unintentional injuries continue to be the fifth leading cause of death overall, exceeded only by heart disease, cancer, stroke, and chronic obstructive pulmonary diseases. Looking at single years of age, unintentional injuries were the leading cause of death for people aged 1 through 33, 36, and 38-39 years old in 1996. (HIV infection was the leading cause for ages 34-35 and 37.) From age 1 to 29, deaths from motor-vehicle crashes alone exceed those from any other cause.

Unintentional injuries also resulted in more than 2.7 million years of potential life lost before age 75 in 1996. Based on this measure, unintentional injuries rank third in importance behind cancer (4.4 million years) and heart disease (3.5 million years).

Nonfatal injuries also affect millions of Americans. Each year about 2.6 million people are hospitalized for injuries; about 34.9 million people are treated in hospital emergency departments; about 87.6 million visits to physicians' offices are due to injuries; and about 61.3 million people -- more than one in four -- seek medical attention or suffer at least one day of activity restriction from an injury.

The economic impact of these fatal and nonfatal unintentional injuries amounted to $480.5 billion in 1998. This is equivalent to about $1,800 per capita, or about $4,700 per household. These are costs that every individual and household pays either directly out of pocket or through higher prices for the goods and services they buy or through higher taxes.

The leading causes of fatal unintentional injuries in 1998 are the same top five since 1970 and they account for 80% of all deaths (74,000 of the 92,200).

Unintentional-Injury Deaths by Event, United States, 1998

Motor vehicle	41,200
Falls	16,600
Poisoning*	8,400
Drowning	4,100
Fires and burns	3,700

* Includes solid and liquid poisonings only.

http://www.nsc.org/

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Ten Leading Causes of Death in the U.S.: (1998)

Heart Disease: 724,859
Cancer: 541,532
Stroke: 158,448
Chronic Obstructive Pulmonary Disease: 112,584
Accidents: 97,835
Pneumonia/Influenza: 91,871
Diabetes: 64,751
Suicide: 30,575
Nephritis, nephrotic syndrome, and nephrosis: 26,182
Chronic Liver Disease and Cirrhosis: 25,192
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Source: *National Vital Statistics Reports*, Vol. 48, No. 11.

http://www.cdc.gov/nchs/fastats/lcod.htm

USDA Publishes *Listeria* Proposal

Earlier this week, USDA published in the *Federal Register* its long-awaited proposed rule that would require makers of ready-to-eat meat and poultry items to test for *Listeria* in their plants.

The proposal would require plants to test product-contact surfaces for generic *Listeria*, unless they consider *Listeria monocytogenes* a hazard reasonably likely to occur after the kill step and implement controls under their HACCP plan. This provision clearly seeks to encourage plants to address *Listeria* under HACCP, rather than in their sanitation programs.

For plants that are subject to the testing requirements, the schedule will be based on plant size: large plants must take four tests per line per month, small plants must take two tests per line per month and very small plants must take one test per line per month. All test results would be shared with USDA inspectors.

If a positive finding is identified on one of the product-contact surfaces, the plant must determine which lots are affected, begin testing finished product and dispose of the implicated product.

For more info link to: [Federal Register: February 27, 2001 (Volume 66, Number 39)] under Food Safety and Inspection Service.

REF: *Food Chemical News Daily*, 3(168), March 2, 2001.

Blood and Hair Mercury Levels in Young Children and Women of Childbearing Age --- United States, 1999

Mercury (Hg), a heavy metal, is widespread and persistent in the environment. Exposure to hazardous Hg levels can cause permanent neurologic and kidney impairment. Elemental or inorganic Hg released into the air or water becomes methylated in the environment where it accumulates in animal tissues and increases in concentration through the food chain. The U.S. population primarily is exposed to methylmercury by eating fish. Methylmercury exposures to women of childbearing age are of great concern because a fetus is highly susceptible to adverse effects. This report presents preliminary estimates of blood and hair Hg levels from the 1999 National Health and Nutrition Examination Survey (NHANES 1999) and compares them with a recent toxicologic review by the National Research Council (NRC). **The findings suggest that Hg levels in young children and women of childbearing age generally are below those considered hazardous. These preliminary estimates show that approximately 10% of women have Hg levels within one tenth of potentially hazardous levels indicating a narrow margin of safety for some women and supporting efforts to reduce methylmercury exposure.**

Editorial Note: The NHANES 1999 blood and hair Hg data are the first nationally representative human tissue measures of the U.S. population's exposure to Hg. Previous estimates of methylmercury exposure in the general population were based on exposure models using fish tissue Hg concentrations and dietary recall survey data. The NRC review provided guidance to the Environmental Protection Agency (EPA) for developing an exposure reference dose for methylmercury (i.e., an estimated daily exposure that probably is free of risk for adverse effects over the course of a person's life). The NRC report recommended statistical modeling of results from an epidemiologic study conducted in the Faroe Islands near Iceland, where methylmercury exposures are high because of the large amount of seafood eaten by the local population. Results of this study were used to calculate a benchmark dose (BMD), an estimate of a methylmercury exposure in utero associated with an increase in the prevalence of abnormal scores on cognitive function tests in children. The lower 95% confidence limit of the BMD (BMDL*) was recommended to calculate the EPA reference dose. The NRC committee recommended a BMDL of 58 ppb Hg in cord blood (corresponding to 12 ppm Hg in maternal hair). In the NHANES 1999 sample, there were no measurements of blood values >58 ppb or hair values >12 ppm. A margin-of-exposure analysis (i.e., an evaluation of the ratio of BMDL to estimated population exposure levels) showed ratios of <10 when comparing BMDL with NHANES 1999 estimates of the 90th percentile for blood and hair Hg levels in women of childbearing age. Margin-of-exposure measures of this magnitude indicate a narrow margin of safety and suggest that efforts aimed at decreasing human exposure to methylmercury should continue.

[*A BMD of 85 ppb Hg in cord blood or 17 ppm Hg in maternal hair was estimated to result in an increase in the proportion of abnormal scores on the Boston Naming Test for children exposed in utero from an estimated background prevalence of 5% to a prevalence of 10%. BMDL recommended by NRC is the lower 95% confidence bound of the BMD.]

The findings in this study are subject to at least three limitations. First, the ratio of Hg in cord and maternal blood is uncertain. The NRC committee summarized some studies that suggest that cord blood values may be 20%-30% higher than corresponding maternal blood levels. However, other studies suggest that the ratio is closer to 1:1; therefore, the NHANES values may not be directly comparable to BMDL recommended by NRC. Second, NHANES cannot provide estimates of Hg exposure in certain highly exposed groups (e.g., subsistence fishermen and others who eat large amounts of fish). Published data from studies of highly exposed U.S. populations indicated that some persons attain Hg tissue levels above BMDL. Third, the sample size of NHANES 1999 was small and the 1999 survey was conducted in only 12 locations. More data are needed to confirm these findings.

The long-term strategy for reducing exposure to Hg is to lower concentrations of Hg in fish by limiting Hg releases into the atmosphere from burning mercury-containing fuel and waste and from other industrial processes. On the basis of data from EPA's National Toxics Inventory, air emissions of Hg decreased approximately 21% during 1990-1996, largely because of regulations for waste incineration. EPA expects this trend to continue as regulations are implemented for waste incineration and chlorine production facilities and are developed for electric power utilities. Fish is high in protein and nutrients and low in saturated fatty acids and cholesterol and should be considered an important part of the diet. The short-term strategy to reduce Hg exposure is to eat fish with low Hg levels and to avoid or to moderate intake of fish with high Hg levels. State-based fish advisories and bans identify fish species contaminated by Hg and their locations and provide safety advice (http://www.epa.gov/ost/fish). The Food and Drug Administration advises that pregnant women and those who may become pregnant should not eat shark, swordfish, king mackerel, and tile fish known to contain elevated levels of methylmercury. Information is available at http://www.fda.gov/bbs/topics/ANSWERS/2001/advisory.html.

To read the entire article link to: http://www.cdc.gov/mmwr/

REF: *Morbidity and Mortality Weekly Report*, 50(08), March 02, 2001.

Toxicology Tidbits

FDA Survey of Imported Fresh Produce

Executive Summary

In March of 1999, FDA initiated a 1000 sample survey focused on high volume imported fresh produce. Broccoli, cantaloupe, celery, cilantro, culantro, loose-leaf lettuce, parsley, scallions (green onions), strawberries and tomatoes were collected and analyzed for *Salmonella*, and *E. coli* O157:H7. All commodities except for cilantro, culantro, lettuce and strawberries were analyzed for *Shigella*. Twenty-one countries were represented in the collection and sampling of fresh produce.

Of 1003 samples that were collected and analyzed, 96% were not contaminated with *Shigella*, *Salmonella*, and/or *E. coli* O157:H7. Forty-four samples (4% of the total number sampled) were contaminated with either *Shigella* or *Salmonella* while 0% of the produce items were contaminated with E. coli O157:H7. Of the 44 contaminated samples, 35 (80%) were contaminated with *Salmonella* and 9 (20%) were contaminated with *Shigella*.

The full report can be viewed at: http://www.cfsan.fda.gov/~dms/prodsur6.html

REF: U. S. Food and Drug Administration, Center for Food Safety and Applied Nutrition, January 30, 2001.

Atrazine Testing May Set Precedence for Other Pesticides

Syngenta AG, the makers of atrazine, are awaiting testing designs that are being developed by an expert panel of academic researchers. The studies are designed to examine non-cancer effects of atrazine - with special emphasis on the endocrine system.

A draft EPA hazard assessment submitted by the Scientific Advisory Panel (SAP) on December 4, 2000 indicated that atrazine is not likely to cause cancer in humans. The SAP was charged with examination of atrazine due to earlier research that indicated early onset of tumors in one strain of rat that is naturally prone to tumor formation. The panel indicated that the mode of action in the rat is understood, and that tumor formation was only observed at high exposure levels. They stated that the mode of action was not relevant to humans.

Endocrine disruption, one of the key topics of the Food Quality Protection Act, is becoming the endpoint of concern for the pesticide manufacturing industry. If effects on the endocrine system are detected, regulatory actions can be delayed. Pesticides in this category (endocrine disruptors) are unlikely to be registered by the EPA because they fall into "a bottomless pit of study." (*Chemical Regulation Reporter* Vol. 25, No. 1).

REF: *Chemically Speaking*, January 2001.

DDT Manufacturers to Pay $73 Million for Damages Along California's Coast

Four companies, linked to a massive pile of DDT on the ocean floor off the coast of Los Angeles, either owned or operated a manufacturing plant in Torrance, CA, that produced DDT. The plant is currently abandoned. The settlement is the largest sum ever paid for environmental damage from pollution other than oil.

Thirty million dollars will be spent to restore natural resources, such as bird and fish habitat, while the remainder will be spent to clean up or cap the 110 tons of DDT that is spread over a 17-square-mile area of the Palos Verdes shelf.

Government scientists contend that the DDT in the sediments is slowly released into algae and bottom feeding fish, and then travels up the food chain. DDT has been detected in white croaker tissue, and it is believed to be the cause of reproductive effects plaguing eagles, pelicans, and peregrine falcons that consume fish from the waters. (*Chemical Regulation Reporter* Vol. 25, No. 1).

REF: *Chemically Speaking*, January 2001.

Natural Events and Economic Factors Lead to Increased Pesticide Use

In an analysis conducted with data from 1992 to 1997, it was determined that the average annual increase in pesticides usage was 93 million pounds. Total amount of pesticide used in 1997 was 985 million pounds. The study reviewed pesticide use for 87 crops.

Although overall usage increased, reductions were noted for over half of the comparisons made between years. The use of Bt cotton alone eliminated the need for an estimated 2 million pounds of insecticide. Additionally, an estimated 17 million pounds of pesticide were not needed due to newer compounds.

However, large increases were noted for differing reasons for certain crops. A six million pound increase in herbicide was noted due to increased adoption of no-till cropping. A more virulent strain of potato late blight caused an increase in 37 million pounds of fungicides and vine desiccants. The single largest increase was a result of low prices for processed oranges. Florida growers switched from highly active compounds to more oil-based compounds, which require more material for efficacy. This one action was responsible for a 48 million pound increase. The study also determined that insect pests that required high amounts of insecticides in the early 1990's, such as sweet potato whitefly, Colorado potato beetle, tobacco boll/bud worms, and corn rootworm, were being managed with substantially fewer pounds of materials by the end of the century. (National Center for Food and Agricultural Policy, November 30, 2000, www.ncfap.org/).

EDITORIAL NOTE: Again we would like to caution readers that reporting the total amount of pesticide used in pounds is a virtually useless piece of information about how these pesticides may affect the environment or be found as residues

*in foods. The potentially adverse effects of chemicals is **dose** (amount) and **potency** related, and without knowing more about which chemicals are involved, it is impossible to say that a reduction or increase in the total amount used is significant in relation to human or environmental health. ALC*

REF: *Chemically Speaking*, January 2001.

Food Safety Links

For those interested in the food safety field, the USDA/FDA Foodborne Illness Education Information Center has created a list of selected Web sites that might be of interest. The USDA/FDA Foodborne Illness Education Information Center provides information about foodborne illness prevention to educators, trainers, and organizations developing education and training materials for food workers and consumers.

The Foodborne Illness Educational Materials Database is a compilation of consumer and food worker educational materials developed by universities; private industry; and local, state, and federal agencies. This includes computer software, audiovisuals, posters, games and teaching guides for elementary and secondary school education; training materials for the management and workers of retail food markets, food service establishments and institutions; educational research and more. The list of websites are available at:
http://www.nalusda.gov/fnic/foodborne/fbindex/index.htm

CPSC Votes to Begin Rulemaking to Ban Candles With Lead Wicks

Major Retailers Agree to Not Sell Lead Wick Candles

The U.S. Consumer Product Safety Commission (CPSC) voted to begin rulemaking that could lead to a ban on candles with lead-core wicks. CPSC has determined that candles using lead wicks could present a lead poisoning hazard to young children.

Studies have found that despite a voluntary industry agreement in the past to remove lead from candle wicks, a small percentage of candles sold today still contains lead in their wicks. The lead cores are used to hold the wicks upright as they burn. The study found that lead-core wicks could emit relatively large amounts of lead into the air during burning. The emitted lead presents a risk to children from exposure through inhalation and from ingestion of lead that may settle on surfaces in the room. This deposited lead could remain accessible to a child for an extended period of time and allow exposure through direct mouthing of surfaces or objects or by hand-to-mouth contact.

Some of the candles emitted lead levels in excess of 2,200 micrograms per hour - about five times the rate that could

lead to elevated levels of lead in a child. CPSC estimates that a level of 430 micrograms per hour could result in hazardous exposure to children.

The CPSC found that burning a candle with a lead wick for four hours per day, for 15 to 30 days, could result in blood lead levels above the 10 micrograms per deciliter that is considered a health concern for young children.

Lead poisoning in children is associated with behavioral problems, learning disabilities, hearing problems and growth retardation. Because lead accumulates in the body, even exposure to small amounts of lead can contribute to the overall level of lead in the blood. It is estimated that approximately 1 in every 25 children under the age of 6 in the United States has elevated levels of lead in their blood; that is almost one million children nationwide. The primary source of lead poisoning in the United States is lead from paint in old homes.

For more on this story go to: http://www.cpsc.gov

REF: *U.S. Consumer Product Safety Commission, Release # 01-083*, February 14, 2001.

Debate Over Genetically Modified Food Gets an Educational Home on the Web

Will genetically modified food benefit society, or will it ultimately pose threats to human health, the environment and the world economy? These questions are debated in scientific circles, but the public gets just a narrow glimpse of the debates, usually in highly charged news articles. That will change this week with the launching of a Web-based forum that will provide the public and policy makers with the tools to understand the debate over genetically modified foods (GMF). The information available on-line will come from top scientists in the field who study the techniques of genetic engineering and their impact on human health and the environment.

"Controversies Surrounding Genetically Modified Food" is the latest product of the SCOPE (Science Controversies On-Line: Partnerships in Education) Project ("http://scope.educ.washington.edu"). The Web-based project is the work of editors at *Science* magazine, which is published by the American Association for the Advancement of Science, and scientists at the University of California-Berkeley and the University of Washington. The groups are collaborating in order to provide a balanced scientific view of related issues and to do so in a way that might be useful to educators, scientists, policy makers, and the general public.

REF: *American Association for the Advancement of Science Press Release*, February 16, 2001.

National Library for the Environment

Part of the National Council for Science and the Environment, the National Library for the Environment touts itself

as "a universal, timely, and easy-to-use single-point entry to quality environmental data and information for the use of all participants in the environmental enterprise." There are links to environmental briefing books for numerous countries, as well as US states, grant information, career resources and meeting schedules. The site also provides access to hundreds of Congressional Research Service Reports and Issue Briefings, which are often hard to find.

http://www.cnie.org/nle/

What's This Doing In My Food? A Guide to Food Ingredients

Although many of us never give them a thought, we count on a variety of food ingredients to make food more appealing to the senses, provide nutritional benefits and keep food fresh longer, among other things. These ingredients can cause concern and confusion among consumers — especially if they have chemical names. Actually, many of these additives are quite familiar, they just go by more scientific names when used on food labels. For example, ascorbic acid is another name for vitamin C and alpha-tocopherol is vitamin E.

To learn more about this link to: http://www.ific.org/proactive/newsroom/

EPA releases agreement to reduce exposure to phosphine fumigants

EPA completed a risk assessment for the pest control fumigants aluminum and magnesium phosphide in September 1998. These materials release highly toxic phosphine gas when they react with the moisture in the atmosphere. This risk assessment identified risks of concern for applicators and occupational/residential bystanders, based on the available data and information. EPA issued a RED (Reregistration Eligibility Decision) for Aluminum and Magnesium Phosphide in December 1998. The RED contained a series of proposed risk mitigation measures which are the focal point of an ongoing stakeholder process. These measures generally have been viewed very negatively by members of the user community who believe that implementation of such measures would be tantamount to cancellation of the chemical.

In the RED, EPA proposed risk mitigation measures which were designed to address the risks identified in the risk assessment. The Agency, recognizing the importance of phosphine to agriculture, the lack of viable alternatives, and the potential impacts of the initial set of mitigation measures on the continued use of the chemicals, committed to pursue an extensive stakeholder involvement process regarding these measures with the expressed intent to gather information on the impacts of the proposed measures and, most importantly, to explore possible alternative mitigation measures that would achieve risk reduction while maintaining the ability to continue to use phosphine and achieve the benefits derived from that use.

To read this Federal Register notice link to: http://frwebgate.access.gpo.gov/

REF: *Federal Register*, 66(23), February 2, 2001.

Analyzing Analysis: A Detection Methods Retrospective

Since the inception of the *Agrichemical & Environmental News* (Washington State University) newsletter thirty years ago, the capability to determine pesticide residues in our food supply has changed dramatically. Analytical chemistry and instrumentation have become increasingly sophisticated. These advances have made it possible to detect infinitesimal quantities of almost anything. But just because a pesticide can be detected, does that necessarily make it harmful?

To read the entire article link to the January 2001 issue: http://www.tricity.wsu.edu/aenews/

REF: *Agrichemical & Environmental News*, 177, January 2001.

Herbicide Company Genealogy

Arnold P. Appleby, Professor Emeritus in Crop Science at Oregon State University, has posted an interesting project on the Internet. Using personal interviews, memory, and other admittedly inexact methodologies, he has compiled a "family tree" of herbicide companies in the United States over the past half century. If you think the history of agrichemical regulation has been convoluted in the past thirty years, take a look at this!
http://www.css.orst.edu/herbgnl/tree.pdf

REF: *Agrichemical & Environmental News*, 177, January 2001.

Thin Eggshells and Pregnant Chads: Toxicological Signposts on the Bridge to the 21st century

---- by Dr. Allan S. Felsot, Environmental Toxicologist, WSU

I sat riveted to my TV in late November watching the latest phase of the Presidential election. The "trial" of the

contest phase, which followed the second official certification of the Florida vote count, was being televised and the witnesses for the plaintiff were being coddled by their lawyer and excoriated by the lawyer for the defense. Of course, courteousness and civility reigned. And then it hit me. The discourse wasn't really about election interruptus, it was about our failure to understand the uncertainties associated with measurement and mistaking correlation for causation. When I viewed the whole mess in terms of science (i.e., what principles do we use to create and test hypotheses?) I wasn't going to be dragged from my TV set without kicking and screaming.

To read the entire article link to the January 2001 issue: http://www.tricity.wsu.edu/aenews/

REF: *Agrichemical & Environmental News*, 177, January 2001.

Pesticides and Salmon, Part 1
Something Smells Fishy

---- by Dr. Allan S. Felsot, Environmental Toxicologist, WSU

Something's fishy in the waters of the Pacific Northwest. According to regional newspapers, salmon are losing their sense of smell and genetic males are posing as females. Move over dams, loss of quality habitat, excessive fishing, and global warming. Pesticides are the latest smoking gun in the saga of diminishing salmon returns.

But the white knights have descended to rescue the salmon in distress. The Washington Toxics Coalition and the Northwest Coalition for Alternatives to Pesticides have teamed up with the Pacific Coast Federation of Fishermen's Associations and the Institute for Fisheries Resources to sue the Environmental Protection Agency for violations of the Endangered Species Act. Specifically, the advocacy groups have seized upon the recent reports of sick salmon to back their demand that the EPA consult with the National Marine Fisheries Service over its decisions to register pesticides that may affect salmon.

For more info link to: http://www.tricity.wsu.edu/

REF: *Agrichemical & Environmental News*, 179, March 2001.

A Herbicide "Mode of Action" Primer

Herbicides can be classified in several different ways.

- 1. Site of uptake in the plant (root vs. shoot).
- 2. Degree of translocation within the plant (systemic vs. contact).
- 3. Time of application (preplant incorporated, preemergence, postemergence).
- 4. Chemical structure similarity (phenoxy vs. triazine).

- 5. Mode of action (photosynthetic inhibitor vs. EPSP synthase inhibitor).

"Mode of action" is the sequence of events through which a herbicide kills a plant. Common herbicides used in Washington State are listed according to their mode of action.

To read the entire article link to the February 2001 issue: http://www.tricity.wsu.edu/aenews/

REF: *Agrichemical & Environmental News*, 178, February 2001.

Genetically Engineered Crops Will Reduce Pesticide Use

According to Kline and Company consultants, genetically engineered crops will be responsible for a 13-million-lb-a-year reduction in insecticides and a 45-million-lb reduction in herbicide use by 2009. The biggest reduction is expected to come from the utilization of genetically engineered corn to control corn rootworm. Currently, an enormous amount of soil insecticide is applied to control rootworm. Unfortunately, much of this pesticide is unnecessary, but it must be applied because there is no way to predict where rootworm problems will occur. Engineered cotton is already reducing the amount of insecticide applied to cotton. Further reductions are predicted as growers shift from pre-plant/pre-emergence herbicides to over-the-top applications of glyphosate and other herbicides to crop plants engineered to tolerate herbicides.

To read this article link to: http://www.klinegroup.com/Press/6_20001024.htm

Reminder! NPTN & NAIN

The National Pesticide Telecommunications Network (NPTN) is a toll-free telephone and internet service that provides information about a wide range of pesticide issues. This service of EPA and Oregon State University can answer questions about toxicology, poisoning, environmental impacts, etc. You can contact them from 6:30 a.m. to 4:30 p.m. Pacific time, 7 days a week, excluding holidays. Phone: 1-800-858-7378 or FAX: 1-541-737-0761. You can also ask questions via e-mail nptn@ace.orst.edu or visit their web site http://nptn.orst.edu

The National Antimicrobial Information Network (NAIN) provides similar information about antimicrobials. Contact them if you have questions about toxicology, effectiveness, regulation, etc., of antimicrobial chemicals. 1-800-447-6349 or nain@ace.orst.edu or http://ace.orst.edu/info/nain

For Fun

A Periodic Table of Comic Books? Check out this site if you are interested in learning about metals and gases. Clicking on an element allows you to see a list of comic book pages involving that element.

This site was put together by professors John P. Selegue and F. James Holler, Department of Chemistry, University of Kentucky. The actual cartoons are large files and take a while to download, depending on the speed of your connection. But they are, for the most part, worth the wait.

http://www.uky.edu/Projects/Chemcomics/index.html

Have a question on 2,4-D?

2,4-D, a member of the phenoxy family of herbicides, was the first successful selective herbicide developed. It was introduced in 1946, and rapidly became the most widely used herbicide in the world. A selective herbicide is one that controls weeds in a crop without damaging that crop.

After 50 years of use, 2,4-D is still the third most widely used herbicide in the United States and Canada, and the most widely used worldwide. Its major uses in agriculture are on wheat and small grains, sorghum, corn, rice, sugar cane, low-till soybeans, rangeland, and pasture. It is also used on rights-of-way, roadsides, non-crop areas, forestry, lawn and turf care, and on aquatic weeds. A recently published eight-year U.S Department of Agriculture study (NAPIAP Report NO. 1-PA-96) concluded that, should 2,4-D no longer be available, the cost to growers and other users, in terms of higher weed control expenses, and to consumers, in the form of higher food and fiber prices, would total $1,683 million annually in the U.S. alone. The study also reviewed the 2,4-D epidemiology and toxicology data packages and concluded that after 50 years of extensive use, "The phenoxy herbicides are low in toxicity to humans and animals. No scientifically documented health risks, either acute or chronic, exist from the approved uses of the phenoxy herbicides."

A study entitled. "An economic assessment of the benefits of 2,4-D in Canada" done in 1988 under Canadian Government sponsorship, concluded that the net benefits of 2,4-D in Canada totaled a third of a billion dollars annually. A worldwide study of the benefits of 2,4-D measured in terms of increased food production and lower food prices has never been done, although those benefits are known to be enormous. 2,4-D has for the past fifty years, been a major tool in the continuing fight to reduce world hunger. 2,4-D is the most thoroughly researched herbicide in the world.

For more information link to the Industry Task Force II on 2,4-D Research Data Web Site: http://www.24d.org/

Interesting Websites

FDA Releases New "Playing It Safe With Eggs" Brochure: The new consumer brochure "Playing It Safe with Eggs: What Consumers Need to Know" is now available, which replaces the December 2000 "Food Safety Facts for Consumers: Playing It Safe With Eggs." The brochure is now available on the Web at: http://www.cfsan.fda.gov/~dms/fs-eggs.html

New Food Safety Web site from USDA/ERS: USDA's Economic Research Service (ERS) provides analyses of the economic issues affecting the safety of the US food supply, including the effectiveness and equity of alternative policies and programs designed to protect consumers from unsafe food. http://www.ers.usda.gov/Emphases/SafeFood

Draft Risk Assessment Report for Raw Oysters: The FDA announces the availability of a draft risk assessment report on the estimated public health risks associated with raw oysters containing pathogenic *Vibrio parahaemolyticus*. *V. parahaemolyticus* is a bacterial species that occurs naturally in oysters, and occasionally this organism causes illness in humans, following the consumption of raw oysters. Most often, illness caused by *V. parahaemolyticus* occurs as sporadic cases of self-limiting gastroenteritis, with symptoms such as diarrhea, vomiting, and abdominal cramps. In recent years, however, several outbreaks have been caused by *V. parahaemolyticus*, involving dozens to hundreds of consumers. Also, though rare, the organism can produce a life-threatening septicemia, especially in people having underlying medical conditions such as liver disease or immune disorders. The FDA Talk Paper contains links to the Draft Risk Assessment and Federal Register Notice of Availability: http://www.cfsan.fda.gov/~lrd/tpvibrio.html

Food and Drug Administration Pesticide Program Residue Monitoring 1999: This is the thirteenth annual report summarizing the results of the Food and Drug Administration's (FDA) pesticide residue monitoring program. Eight of the twelve previous reports were published in the *Journal of the Association of Official Analytical Chemists/Journal of AOAC International;* these presented results from Fiscal Years (FY) 1987 through 1994. Results from FY 1995 through FY 1998 were published on FDA's World Wide Web site. This current report includes findings obtained during FY 1999 (October 1, 1998 through September 30, 1999) under regulatory and incidence/level monitoring. Selected Total Diet Study findings for 1999 are also presented. **Results in this and earlier reports continue to demonstrate that levels of pesticide residues in the U.S. food supply are well below established safety standards.** Link to: http://vm.cfsan.fda.gov/

VETERINARY NOTES.....

New Data on Antibiotic Use in Animals Available

The Animal Health Institute (AHI) announced the results of its survey on antibiotic use in animals. The data is based on 1999 antibiotic sales and use information from the United States provided to AHI by its member companies.

"The vast majority of antibiotics sold by AHI members continue to be used for treating and preventing diseases," said AHI President and CEO Alexander S. Mathews. "Antibiotics are valuable veterinary tools that go a long way in promoting animal health, food safety and food security."

The survey found that 20.5 million pounds of antibiotics were sold for use in animals in 1999, a slight increase from the 1998 total of 17.8 million pounds. Of the 20.5 million pounds used, 17.7 million pounds were used for treatment and prevention of disease and 2.8 million pounds were used for improving feed efficiency and enhancing growth. The increase from 1998 to 1999 is largely attributed to greater use of ionophores and arsenicals, which increased 2.5 million pounds from 1998 to 1999. Ionophores and arsenicals are classes of antibiotics that are not used in human medicine.

The AHI last winter released antibiotic use data that quantified for the first time the total amount of active ingredient in antibiotics used in animal agriculture by AHI member companies.

"Animal health companies are committed to working with public health officials to collect data on antibiotic use," said Mathews. "We are hopeful that this data will provide a greater understanding of antibiotic use and we encourage the Food and Drug Administration to meet with stakeholders to identify data needs and put forth a meaningful plan to collect that information."

Antibiotics may be approved for use in both companion and farm animals. There are over 115 million dogs and cats, and over 6.9 million horses, 7.8 billion chickens, 292 million turkeys, 106 million cattle, 101 million pigs and 8 million sheep in the United States.

The Food and Drug Administration’s Center for Veterinary Medicine regulates all antibiotics used in animals. The approval process for all animal health products is stringent and scientific and requires all antibiotics to be proven safe and effective for people and animals.

1999 AHI SURVEY
Antibiotics Reported in Millions of Pounds

Antibiotic Class	**Amount**
Aminoglycosides	.240
Fluoroquinolones	.038
Ionophores/Arsenicals*	9.70
Penicillins	.871
Sulfonamides	.471
Tetracyclines	3.23
Other antibiotics**	5.90
Total	20.45

*Unique drug products developed for animal production and not related to traditional antibiotics.
**Includes cephalosporins, macrolides, lincosamides, polypeptides, streptogramins, and other minor classes of antibiotics.

REF: http://www.ahi.org

Human Gut Potential Breeding Ground for Antibiotic Resistance

Bacteria in your gut could be exchanging genetic material, including antibiotic resistance genes, with bacteria that are simply passing through on your food, say researchers from the University of Illinois. The study, which appears in the February 2001 issue of the journal *Applied and Environmental Microbiology*, is the first to provide evidence of this phenomenon in the human digestive tract.

"What we've shown is antibiotic resistance genes in nature can move about in the human colon," says Abigail Saylers, the senior investigator. "A surprising amount of gene transfer is occurring in the human colon. There's a lot of bacterial hanky-panky going on in there."

These findings are important given recent concerns over the safety implications of antibiotic-resistant bacteria in foods and the likelihood that such bacteria may transfer resistance genes to human intestinal bacteria.

Scientists have long believed that bacteria in the intestines, known as *Bacteroides*, could exchange genetic information. Under certain conditions bacteria might copy and pass specific genes on to other bacteria which incorporate them into their genetic makeup, a process known as conjugation or horizontal gene transfer. Laboratory experiments in the past few years have supported this theory.

"The question we asked is to what extent is there gene transfer in nature? In the lab you are doing these experiments under what you hope are ideal conditions," says Salyers. "Just because it transfers in the lab it doesn't mean it will transfer in nature."

Salyers and her colleagues compared *Bacteroides* strains collected before 1980 by the Anaerobe Laboratory at the Virginia Polytechnic Institute with ones collected from ordinary people and medical centers across the United States in the late 1990s, focusing on antibiotic resistance genes. They found a significant increase in resistance to the antibiotic tetracycline was caused by a single gene, from 23% of the samples in the 1970s to more than 80% in the 1990s. They also found a significant, though smaller, increase in erythromycin resistance due to only two genes.

"Because the same resistance gene was found in a variety of *Bacteroides* species, we believe that the increase over the past three decades is due to horizontal gene transfer," says Salyers.

These findings raise the question of whether antibiotic resistance genes in bacteria in the food supply could be transferred to bacteria in the human gut.

"For example, you feed a pig antibiotics for a large part of its life. The bacteria in the pig's digestive tract become resistant to antibiotics. You slaughter that pig and send it to market. The bacteria end up on the meat products. The consumer then takes that product home and consumes those bacteria," says Salyers. "Horizontal transfer can take place in as little as an hour."

Antibiotic resistance in *Bacteroides* does pose a threat to human health. These bacteria often cause post-surgical infections, and these infections are increasingly becoming resistant to antibiotics commonly used to treat them, such as clindamycin, which is in the same family of antibiotics as erythromycin. Another concern is that *Bacteroides* may pass these antibiotic-resistance genes on to other bacteria that can cause human disease.

"Once these genes get loose it's like letting a genie out of a bottle," says Salyers. One possible cause for all this "bacterial sex" could be the antibiotics themselves, says Salyers. "We know from laboratory studies that one catalyst that triggers horizontal gene transfer is the antibiotic tetracycline. Tetracycline is like an aphrodisiac for Bacteroides,

causing it to transfer its resistance genes. This suggests to us that this orgy of horizontal gene transfer may have been due to widespread use of tetracycline in humans over the last several decades."

Salyers warns that her group's research should not signal alarm but should be a starting point for further research. "Studies of this sort should be done on other types of bacteria. We need to see if this is something peculiar to *Bacteriodes* or, if it's as I suspect, we're going to find this level of horizontal gene transfer is taking place in other types of bacteria, both in and out of the human intestines," says Salyers, who is also president-elect of the American Society for Microbiology.

The American Society for Microbiology is the largest single life science society, composed of over 42,000 scientists, teachers, physicians, and health professionals. Its mission is to promote research and training in the microbiological sciences and to assist communication between scientists, policymakers, and the public to improve health, economic well being, and the environment.

REF: *American Society for Microbiology Press Release*, February 16, 2001
http://www.asmusa.org/pcsrc/gutresistance.htm

Proper Labeling of Animal Drugs -- The Veterinarian's Requirements

Why is drug labeling important? Drug residues in milk, meat, and other food derived from animals occur on the farm, not later in the processing channels. Labeling requirements exist as part of the overall efforts employed by Federal and State agencies, veterinarians, the animal industry, and producers to avoid drug residues in our food supply. The requirements are intended to ensure that the producer has adequate directions for use of the product in hand every time the drug is administered. Great emphasis is placed on proper drug labeling in an attempt to heighten the producer's awareness of proper drug use and residue avoidance.

The requirements for proper labeling* of veterinary prescription drugs and extra-label use (ELU) drugs by veterinarians exist in three general areas. The first includes requirements under State veterinary practice acts and/or the board of pharmacy regulations. The second set of regulations exists under the Federal Food, Drug, and Cosmetic Act (the Act). The third set of requirements for proper drug labeling is in the Grade A Pasteurized Milk Ordinance (PMO). The PMO is a model ordinance that has been adopted into many State laws. The PMO governs the shipment of Grade A milk in interstate commerce in the U.S.

What do State practice and boards of pharmacy acts require for animal drug labeling? The requirements vary from State to State. It is up to the individual veterinary practitioner to be familiar with their State requirements. In general, States require that all veterinary prescription and ELU drugs be properly labeled when dispensed. A complete label should include the information set forth in the table below, but more may be required.

REQUIRED BY:	**State Laws**	**AMDUCA**	**PMO**
Names and address of the prescribing veterinarian	Yes	Yes	Yes
Active Ingredient(s)	Yes	Yes	Yes
Directions for use	Yes	Yes	Yes
Cautionary Statements	Yes	Yes	Yes

Withdrawal, withholding, or discard time for meat, milk, eggs of other food	Yes	Yes	Yes
Vet's phone number	Some States	No	No
Client name	Some States	No	No
Animal identification	Some States	No	No
Expiration date	Some States	No	No

What is required under the Federal Food, Drug, and Cosmetic Act? The Animal Medicinal Drug Use Clarification Act (AMDUCA) 21 CFR Part 530 applies to the extra-label use in an animal of any approved new animal drug or new human drug by or on the lawful order of a licensed veterinarian within the context of a valid veterinary-client-patient relationship. Any human or animal drug prescribed and dispensed for extra-label use by a veterinarian or dispensed by a pharmacist on the order of a veterinarian shall bear or be accompanied by labeling information adequate to assure the safe and proper use of the product. The specific required information is found in the table.

What about the PMO? The PMO requires specific labeling information to be included on all drugs stored on dairy farms (see table). This includes prescription drugs, ELU drugs, and drugs sold over-the-counter. The Grade A Pasteurized Milk Ordinance (PMO) was not produced by the Public Health Service/Food and Drug Administration alone. The PMO was developed with the assistance of milk sanitation and regulatory agencies at every level of Federal, State, and local government including both health and agriculture departments; all segments of the dairy industry including producers, plant operators, equipment manufacturers, and associations; many educational and research institutions; and helpful comments from many individual sanitarians and others. The finding on a dairy farm of an improperly labeled animal drug may result in that farm failing a compliance inspection and possible loss of their permit to ship Grade A milk.

What about drugs sold over-the-counter (OTC)? All FDA-approved OTC drugs bear adequate directions when used in accordance with their labeling (on label use). If an OTC drug is dispensed by a veterinarian for an ELU, its label must comply with State, Federal, and PMO requirements.

* The State and PMO labeling requirements discussed in this article are in addition to the approved labeling or the general labeling provision of the Federal FD&C Act.

REF: *FDA Veterinarian*, XVI(1), January/February 2001.

FDA changes milk testing guidelines

The milk industry will be able to confirm the presence of drug residues before beginning a producer traceback, according to a draft memorandum issued by FDA last month. The testing procedure will still require processors to notify state regulators immediately after finding a presumptive positive.

Financial loss for producers

One of the problems producers discovered over the last few months was that most dairy processors did not want to

take on the burden that a presumptive positive entails, so they were outright rejecting loads after the first test, resulting in a financial loss for producers.

REF: *Food Chemical News*, 42(52), February 12, 2001

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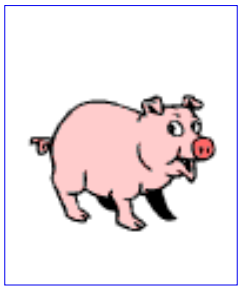

Back to the Beginning