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DPR Reports Overall Pesticide Use Declined in 1999

SACRAMENTO - The Department of Pesticide Regulation (DPR), part of the California Environmental Protection Agency, today reported that pesticide use statewide declined by more than 11.7 million pounds from 1998 to 1999. It marked the first decline in three years.

DPR's preliminary data showed reported pesticide applications totaled 202.6 million pounds in 1999, compared to 214.3 million pounds for 1998.

"The Davis Administration encourages growers and other pesticide users to act as stewards of the environment," said Winston Hickox, Secretary of the California Environmental Protection Agency (Cal/EPA). "This is another sign of progress toward that goal."

DPR Director Paul Helliker highlighted several statistics from the report. "The 1999 data shows less use of organophosphate chemicals -- a category that includes many high-toxicity compounds," Helliker said. "At the same time, we are pleased to see more use of reduced-risk materials and biopesticides that rely on natural pest control."

Reported use includes production agriculture and postharvest fumigation of crops, structural pest control, landscape maintenance, and other uses. Home and garden applications of pesticides, and most industrial and institutional uses, are exempt from reporting. (Preliminary data summaries are on DPR's Web site www.cdpr.ca.gov/docs/pur/pur99rep/99_pur.htm. DPR expects to release a finalized report at year's end.)

Use report statistics provide DPR, the University of California, the agricultural industry, and public interest groups with basic research material. For example, use data help DPR focus grants on projects that seek to replace high-toxicity pesticide uses with reduced-risk alternatives. The Davis Administration's 2000-01 Budget provided funding for continuing Pesticide Use Reporting analysis.

Among statistics from the 1999 use report data:

- - Use of high-toxicity organophosphate and carbamate chemicals declined by almost 800,000 pounds from 1998. Area treated declined by more than 758,000 acres.

-- Chemicals categorized as groundwater contaminants also declined -- by about 414,000 pounds applied and 40,200 acres treated.

-- Chemicals classified as carcinogens declined in overall acreage treated, but increased in pounds applied. Most of the 2-million-pound increase could be attributed to two fumigants -- 1,3-D and metam-sodium. DPR analysts said metam-sodium poundage increased as a pre-plant soil treatment for a few crops where acreage increased, including carrots, potatoes, and processing tomatoes.

-- Chemicals classified as reproductive toxins also showed an overall decline in acreage treated and increased poundage. Two fumigants -- metam-sodium and methyl bromide -- accounted for most of the 5.3-million-pound increase. DPR analysts linked more methyl bromide use to more strawberry plantings, and to one-time treatments of soil before winegrape planting and replanting.

"This data supports DPR decisions to tighten the regulation of fumigants while we work on the difficult task of finding reduced-risk alternatives to these pesticides," said Helliker. "For example, DPR has awarded more than \$186,000 to the strawberry industry since 1998 to help explore alternatives to methyl bromide. Our latest, \$93,000 strawberry grant awarded in May is devoted exclusively to non-chemical alternatives."

By the end of this year, DPR expects to have awarded more than \$7 million since 1995 for least-toxic pesticide research and alternatives projects under its Pest Management Grants Program.

California was the first state to require full use reporting, and DPR has compiled the reports in the most extensive database of its kind in the nation. DPR analyses show pesticide use varies from year to year, depending upon pest problems, weather, cropping patterns, and other factors.

Summaries of 1999 pesticide use are available free online. Data summaries from 1990 to 1998 are also available. Each summary includes two versions of the data (one indexed by chemical, the other by crop), with number of applications, acreage or units treated, and pounds of pesticide used. A county-by-county summary of pesticide use is also available online. ><http://www.cdpr.ca.gov/docs/pressrls/dprreports.htm><

The 400-page summaries also may be ordered in hard copy (\$10 each) or on diskette (\$2.50). To order, send payment to: Cashier, California Department of Pesticide Regulation, 830 K Street, Sacramento 95814-3510. A complete data set of the 2.5 million-plus individual 1999 pesticide application records is also available on CD ROM for \$12. For information about the CD-ROM, call the DPR Environmental Monitoring and Pest Management Branch at (916) 324-4100.

One of six boards and departments within Cal/EPA, DPR regulates the sale and use of pesticides to protect human health and the environment.

REF: Department of Pesticide Regulation News Release (00-22), September 27, 2000.

EDITORIAL NOTE:

When reading statistics about reductions in pesticide use on a year by year basis, it is important to remember two things; the first is that such statistics based on the total poundage must be viewed with a multi-year perspective, and that total poundage is an extremely crude toxicological measure since it ignores differences in potencies and types of toxic effects.



Pesticide Tolerance Reassessments Rarely Require Use of

Children's Safety Factor, GAO Finds

Measures in the Food Quality Protection Act (FQPA) intended to protect children from pesticides in foods have not for the most part reduced pesticide residues in foods, the General Accounting Office (GAO) has reported. Relatively few of the tolerances EPA has reassessed since the FQPA was passed were changed as a result of a provision in the act authorizing EPA to use a 10-fold safety factor when determining pesticide tolerances for children's food, GAO found.

The report examines pesticides that EPA had reassessed through April of this year. For about 47% of these, the manufacturer agreed to eliminate the tolerances and withdraw the pesticide uses before a safety factor or aggregate risks were considered. In most of these cases, according to GAO, the pesticides were no longer used on a particular crop. Most of the remaining reassessments resulted in no change.

The Food Quality Protection Act of 1996 requires EPA to ensure that pesticide residues on food - known as tolerances - do not threaten human health. In addition, EPA is generally required to use a 10-fold "safety factor" in determining tolerances for children's food and to ensure that children will not be harmed from aggregate pesticide exposure, or exposure to all pesticides from all sources.

GAO also said the only tolerances counted as reassessed for the organophosphates were those canceled voluntarily, "because [they] will require a cumulative assessment before existing tolerances can be formally reassessed."

When pesticides are under review, an EPA committee suggests the appropriateness of applying the additional safety factor based on the evidence of susceptibility in children. So far, the committee has decided to apply the safety factor for 49 pesticides and has found it unnecessary for 56.

Exposure assessment methods under way

Methods for determining aggregate exposure to pesticides, which incorporate exposure data from food, drinking water and residential uses, are still largely in development. In addition, data on nonfood exposures is lacking for most pesticides. EPA has not begun to consider cumulative effects in the regulatory process, according to GAO.

EPA has identified organophosphates as a high-risk group of pesticides and is working on a method to assess their cumulative effects. EPA this summer curtailed the residential uses of the organophosphate Dursban after applying the 10-fold safety factor and conducting an aggregate exposure assessment. The agency plans to conduct a cumulative assessment of the pesticide family when aggregate exposure reviews for all 39 organophosphates are complete.

For more information from the GAO report "Children and Pesticides: New Approach to Considering Risk Is Partly in Place" go to: <http://www.gao.gov/new.items/he00175.pdf>

REF: *Food Chemical News*, 42(32), September 25, 2000.



DPR Approves \$150,000 Settlement for Earlimart Pesticide Incident

The California Department of Pesticide Regulation (DPR) today approved a \$150,000 settlement for a pesticide incident that sickened dozens of Tulare County residents. It is the largest such settlement in DPR's history.

DPR reached the settlement with Wilbur-Ellis Company, an international agricultural services firm headquartered in San Francisco. In November 1999, Wilbur-Ellis fumigated a 75-acre field in Earlimart with the highly volatile chemical

metam-sodium. Fumes drifted into an adjacent residential area, forcing about 180 residents to evacuate their homes. Some 46 sought medical attention, and about 28 have reported ongoing medical problems.

An investigation by DPR and the Tulare County Agricultural Commissioner's Office concluded that Wilbur-Ellis failed to take appropriate safeguards to prevent the fumes from drifting.

Under terms of the settlement, Wilbur-Ellis agreed to pay DPR \$75,000 in civil penalties without admitting any wrongdoing in the case. The settlement also includes \$75,000 for continued medical monitoring for Earlimart residents.

"We have achieved three important goals with this settlement," said DPR Director Paul E. Helliker. "First, we wanted to assure that Earlimart residents who have continuing health concerns from the fumigation will receive medical attention without the delays that might result from lengthy litigation. Second, we wanted Wilbur-Ellis to abide by the law and follow procedures to prevent this kind of incident from occurring again. And third, we wanted to send a strong message that DPR will not tolerate misuse of pesticides that puts public health and safety at risk."

Helliker said the settlement underscores DPR's commitment to impose tight restrictions on the use of highly toxic pesticides in general, and fumigants in particular. "We have completed a risk assessment of metam-sodium that is currently undergoing scientific review," said Helliker. "Based on these findings, we intend to strengthen our regulatory controls on the use of metam-sodium." At the same time, Helliker added, DPR is working with agriculture to find less-toxic alternatives to fumigants such as metam-sodium. DPR supports such research through its Pest Management Grants Program.

Wilbur-Ellis and its subsidiaries -- including Connell Brothers Company, Ltd., WilFarm LLC, and the John Taylor Business Unit -- provide crop consulting, chemical application, and other agricultural services in California, Oregon, Washington, and other states. Wilbur-Ellis also is a major West Coast distributor of agricultural chemicals.

In addition to the settlement's financial terms, Wilbur-Ellis agreed to take corrective action on the firm's future use of metam-sodium in California. Among other conditions sought by DPR, Wilbur-Ellis agreed to provide drift reduction training for supervisors and applicators in California, and develop an emergency response notification plan by November 1, 2000. The settlement also requires all California employees of Wilbur-Ellis to receive appropriate training before they handle or apply metam-sodium products. DPR will monitor worker training.

The \$75,000 medical expense fund will pay medical and travel costs for Earlimart residents who have reported persistent health concerns from the metam-sodium fumigation. Complaints include respiratory problems, headaches, dizziness, and eye and throat irritation. Residents will receive treatment from the Occupational and Environmental Health Clinics of the University of California system. The victims, many of whom are Hispanic, will also be eligible for translator services and other social assistance to be financed by the medical fund. Half of the medical expense fund will be administered by Wilbur-Ellis, and half by a designee of the United Farm Workers (UFW).

The settlement directs that any medical expense funds still held by Wilbur-Ellis after one year will be transferred to the UFW or returned to DPR. After two years, UFW will use any of its remaining medical expense funds to develop brochures for pesticide education. Brochures will describe pesticide exposure symptoms and provide other information for individuals seeking medical treatment.

In return for the \$75,000 in civil penalties and other terms of the settlement, DPR agreed to forego civil or criminal prosecution against Wilbur-Ellis related to the Earlimart case.

REF: California Department of Pesticide Regulation, September 21, 2000.



Cancer -- Nature, Nurture, or Both

It has come to be widely accepted that an estimated 80-90% of human cancer is due to environmental factors. Yet in the past 15 years, the explosion of molecular genetics has overshadowed environmental explanations by revealing genetic mechanisms underlying cancer. The gold standard for distinguishing genetic from environmental traits has been the study of twins.

Although a current study (Lichtenstein et al.) has many strengths, its weaknesses illustrate the difficulties of using data on twins in studies of cancer. The study included more than 10,000 cancers in a total population of nearly 90,000 twins in Scandinavia, but the data effectively address cancer at only the four or five most common anatomical sites. The confidence intervals for the heritable proportion of susceptibility to stomach, colorectal, breast, and lung cancer all extend roughly from 5% to 50%, a fairly large range. The study lacks information on screening practices and also lacks data on specific types of exposure (e.g., tobacco use), so issues of interactions between genes and environment cannot be addressed. Indeed, the statistical model used specifically assumes no such interactions.

Despite its limitations, the study provides new and valuable information for the nature vs nurture debate. For example, rates of breast cancer among women who have recently immigrated to the U.S. from rural Asia are similar to those in their homelands and about 80% lower than the rates among third-generation Asian-American women, who have rates similar to or higher than those among white women in the U.S.

Although environmental effects may predominate, the findings with regard to heritability are noteworthy. Rates of concordance were generally higher in monozygotic pairs of twins than in dizygotic pairs, and the estimates of the proportion of susceptibility to cancer that was due to heritable effects ranged from 26% to 42% for cancer at the five common sites. These are substantial burdens of cancer risk, and substantially higher than estimates of risk based on a family history of a particular cancer. This degree of influence is also what would be expected if genetic effects are not limited to the rare, highly penetrant mutations that can result in familial cancer, but are also the result of polymorphisms that carry a much lower level of risk, do not result in an excess of cancer in families, and are much more prevalent than highly penetrant mutations in the general population. The most noteworthy effect of heritable factors is clearly that identified for prostate cancer (42% of risk). Like the other common cancers, prostate cancer shows marked international variation, and the risk among migrant groups tends to rise toward the level in the adopted country over several generations, indicating a substantial environmental component of the risk of this cancer.

For cancer at the common sites in monozygotic twins, the rate of concordance is generally less than 15%. Thus, the fatalism of the general public about the inevitability of genetic effects should be easily dispelled. There is a low absolute probability that a cancer will develop in a person whose identical twin -- a person with an identical genome and many similar exposures -- has the same type of cancer. This should also be instructive to some scientists and others interested in individual risk assessment who believe that, with enough information, it will be possible to predict accurately who will contract a disease and who will not. A woman's average annual risk of a contralateral breast cancer after the diagnosis of a first primary breast cancer is about 0.8%, and this risk is for a person with, obviously, not only the identical genome, but also the identical complex of exposures.

Several things seem clear with respect to the importance of genetic and environmental factors in the causation and control of cancer. First, knowledge of one should expand our knowledge of the other. Information about types of environmental exposure that affect the risk of cancer should point to genes that might modify this risk, and the identification of genes associated with risk could help to indict previously unrecognized environmental risk factors. Second, when genes and environment interact to produce a risk greater than the sum of their independent effects, this interactive component can be eliminated by removing either the genetic or the environmental factor. Finally, for cancer at many sites there are limited effective options for prevention.

REF: *New England Journal of Medicine*, 343(2), July 13, 2000.



Food Irradiation: Available Research Indicates That Benefits Outweigh Risks

(U.S. General Accounting Office's report to Congressional Requesters)

Results in Brief: To date, only limited amounts of irradiated foods have been sold in the U.S. Irradiated spices, herbs, and dry vegetable seasonings constitute the largest category of irradiated food; in 1999, about 95 million pounds of these products were irradiated, accounting for about 10% of their total consumption. In addition, small amounts of irradiated fresh fruits, vegetables, and poultry have been available in wholesale and retail markets, primarily in Florida and several midwestern states. Irradiated frozen ground beef has recently begun to be marketed in several midwestern states and Florida. The major purchasers of irradiated food are health care and food service establishments, which purchase them primarily to minimize the threat of foodborne illness. For example, nursing homes and hospitals serve irradiated poultry to patients with weakened immune systems to reduce the risk of contracting a foodborne illness that would further jeopardize their condition. Concerns on the part of food processors, retailers, and others about consumer acceptance of irradiated foods have limited their availability to date.

Scientific studies conducted by public and private researchers worldwide over the past 50 years support the benefits of food irradiation while indicating minimal potential risks. For example, an expert committee convened by the World Health Organization reviewed the findings of over 50 studies and concluded that food irradiation creates no toxicological, microbiological, or nutritional problems. Cited benefits of food irradiation include (1) reducing foodborne pathogens; (2) extending the shelf life of some fruits and vegetables by preventing sprouting, deactivating mold, and killing bacteria; and (3) controlling insect pests (thus reducing the need for environmentally harmful fumigants). These studies have not borne out concerns about the safety of consuming irradiated foods. For example, the studies indicated that chemical compounds in irradiated food are generally the same as those in cooked foods, and any differences do not put consumers at risk. As for nutritional quality, the main components of food -- carbohydrates, protein, and fats -- undergo minimal change during irradiation, and vitamin loss corresponds to that in foods that are cooked, canned, or held in cold storage. Finally, regarding worker safety and the environment, commercial irradiation plants are strictly regulated. Worldwide, over the past 30 years, while several accidents have resulted in injury or death to workers because of radiation exposure, all of the accidents occurred because safety systems and control procedures had been bypassed. Furthermore, in North America, in over 40 years of transporting the types of radioactive isotopes used for irradiation, there has never been an accident resulting in the escape of these materials into the environment.

For the full report link to: <http://www.gao.gov/new.items/rc00217.pdf>



◆ Toxicology Tidbits ◆

Blue Babies and Nitrate-Contaminated Well Water

The use of nitrate-contaminated drinking water to prepare infant formula is a well-known risk factor for infant methemoglobinemia. Affected infants develop a peculiar blue-gray skin color and may become irritable or lethargic, depending on the severity of their condition. The condition can progress rapidly to cause coma and death if it is not recognized and treated appropriately. Two cases of blue baby syndrome were recently investigated. Both cases involved infants who became ill after being fed formula that was reconstituted with water from private wells. Water samples collected from these wells during the infants' illnesses contained nitrate-nitrogen concentrations of 22.9 and 27.4 mg/L. The federal drinking water standard for nitrate-nitrogen concentrations is 10 mg/L.

REF: *Environmental Health Perspectives*, 108(7), July 2000.



Assessing the Safety of Biotech Foods

Recently, food biotechnology has become a hot topic in the United States, with much interest focused on the safety of these foods. This has attracted major attention from media, from consumers, and from activist groups. But what is food biotechnology? What benefits do these foods bring to us? What foods are produced using biotechnology practices? And most importantly, are these foods safe?

For the full article see: <http://ificinfo.health.org/finsight.htm>

REF: *Food Insight*, May/June 2000.



EPA echoes earlier finding that Bt plant pesticides cause 'no unreasonable adverse health effects'

EPA released a preliminary draft of a comprehensive assessment of Bt corn in which it confirmed its earlier finding that "there are no unreasonable adverse effects" from Bt corn, cotton and potato products. The draft is a prelude to a formal Scientific Advisory Panel (SAP) peer review assessment of *Bacillus thuringiensis* (Bt) corn, cotton and potato plant-pesticides, health and environmental risks for these products. After the peer review, EPA will rely on the assessment to reach decisions on the renewal of expiring registrations for a number of Bt products and the development of any necessary mitigation measures.

Copies of the assessment are available on the EPA Web site at www.epa.gov/scipoly/sap/.

REF: *Food Chemical News Daily*, 3(60), September 25, 2000.



Compost Quality: New Threats from Persistent Herbicides

Persistent herbicides were the culprit in two independent eastern Washington incidents where tainted compost damaged nursery and garden plants. In Spokane, tomatoes and other sensitive plants grown in a commercial greenhouse and gardens developed severe symptoms typical of phenoxy herbicide damage. In Pullman, similar symptoms were noted in tomatoes, potatoes, and leguminous plants like peas and beans. The compost was traced to facilities in Spokane and at Washington State University (WSU) in Pullman.

To read this entire article link to: <http://www.tricity.wsu.edu/aenews/> and click on the October 2000 issue.

REF: *Agricultural and Environmental News*, Issue 174, October 2000.



New USDA National Program Leader

CSREES (USDA Cooperative State Research, Education, and Extension Service) is pleased to announce that Dr. Monty Johnson has accepted the position of National Program Leader for Environmental Toxicology in the Plant Systems Section of the Plant and Animal Systems Unit, and will begin in January, 2001.

An entomologist, Dr. Johnson has been an Extension Specialist for over ten years at the University of Kentucky, where his responsibilities included both the Pesticide Applicator Training and Pesticide Impact Assessment Programs. He is also a keen photographer and his work has been published by the Entomological Society of America.

As a member of the CSREES Pest Management team, Dr. Johnson will provide leadership on state, territory and federal activities that promote a greater understanding of the toxicological consequences of human exposure to pesticides, and the effects of pesticide residues in foods and the environment.

His responsibilities will include administrative oversight for the Pesticide Applicator Training program and coordination of multi-state research and extension projects dealing with pest management issues, worker protection and state and federal regulations on pesticides.



FDA Label Health Claims

ACTION: Final rule.

SUMMARY: The Food and Drug Administration (FDA) is revoking its regulations codifying the agency's decision not to authorize the use of health claims for four substance-disease relationships in the labeling of foods, including dietary supplements: Dietary fiber and cancer, antioxidant vitamins and cancer, omega-3 fatty acids and coronary heart disease, and the claim that 0.8 milligram (mg) of folate in dietary supplement form is more effective in reducing the risk of neural tube defects than a lower amount in conventional food. This action is being taken in response to a decision of the U.S. Court of Appeals for the D.C. Circuit invalidating these regulations and directing FDA to reconsider whether to authorize the four health claims. **This action will result in the removal of the regulations but does not constitute FDA authorization of the four claims.** FDA is completing its reconsideration of the claims and expects to issue decisions on all four claims by October 10, 2000.

REF: *Federal Register*, 65(192), October 3, 2000.



Planning Your Meeting to Help the Speakers

It's important that you inform your speakers of everything they need to know before their engagement. Here's a brief checklist of what speakers need to know when speaking at your engagement:

- Information about the meeting sponsor and attendees.
- Meeting purpose and objectives.
- Presentation location, including meeting room name, date and hour.
- Topic and length of presentation.
- Anticipated size of audience.
- Session format, including length of time allowed for audience questions.
- Names of those sharing the platform, if any, and their topics.
- Checkout instructions and return transportation arrangements.
- Remuneration policy, including when payment will be made.
- Travel and housing arrangements.
- Ancillary media events (pre/post-meeting interviews).
- Meeting room setup and staging information.
- Audiovisual equipment specifics.
- Dress code (e.g. resort wear, business attire, black tie).
- Rehearsal hours, if planned.
- Speaker lounge or "ready room" location and hours.
- Request for presentation outline or handout material, as appropriate.
- Release from granting permission to audio- or video-tape.
- Arrangements for spouse, if invited.

REF: *Veterinary and Human Toxicology*, 42(5), October 2000.



VETERINARY NOTES.....

Without Effective Veterinary Services Animal Diseases Could Spread Globally

Rome - The movement of people, animals and animal products for trade is leading to an increased spread of animal diseases across national borders, the UN Food and Agriculture Organization (FAO) warned in a statement today. Recently, some livestock diseases have been diagnosed for the first time outside of their 'normal' areas of origin, sometimes thousands of kilometers away, according to FAO.

More than 50 people are reported to have died in Yemen over the last days from a suspected outbreak of Rift Valley Fever. From the Al-Hudaydah province at the Western coast of Yemen, high abortion rates in livestock and numerous deaths of young calves and sheep are reported. The affected area is bordering Saudi Arabia's Jizan province. Sixteen people have died of the disease in Jizan last week. This was the first known outbreak of Rift Valley Fever outside Africa, the Organization reported.

The disease was first recognized in the Rift Valley of Kenya in 1930. It is usually an influenza-like illness in humans. The virus affects people as well as animals. The disease is usually transmitted by mosquitoes, but humans can also be affected by contact with blood or body fluids from infected animals.

"It is possible that the virus was brought from Africa through the movement of infected people or the transport of infected animals," said FAO Senior Animal Health expert Mark Rweyemamu. FAO is participating in an emergency mission in Saudi Arabia to help the local authorities to tackle the outbreak. A mission is being organized to Yemen as well.

In South Africa, Foot and Mouth disease broke out a few days ago on a pig farm near Pietermaritzburg, in the KwaZulu-Natal province. This was the first Foot and Mouth disease infection in KwaZulu-Natal since 1956, FAO said. It is suspected that the virus was carried in pig feed obtained illegally from a foreign ship. This particular virus, Type 0, has never before been seen in South Africa. The outbreak has killed 70 pigs, and about 600 pigs have been slaughtered to avoid a major outbreak.

Veterinary authorities have so far succeeded in preventing a further spread of the disease, but it is feared that exports of agricultural products from the region affected could be at risk, with severe economic losses.

Earlier this year, outbreaks of Bluetongue disease occurred in Bulgaria and Sardinia/Italy. Bluetongue is a deadly viral disease of sheep which causes fever and the swelling of the tongue and face. It has never been reported there before.

In the United Kingdom an outbreak of Classical Swine Fever was recently confirmed. Swine Fever kills more than 90 percent of the pigs infected. The disease had been eradicated in the UK many years ago. The infection is thought to have been introduced through meat products from outside the country.

"All these cases illustrate that transboundary animal diseases continue to be a real threat. No country can claim to be safe from these diseases. In an increasingly globalized world, veterinary surveillance systems and services are vital to detect these diseases early enough and to prepare contingency plans to contain those outbreaks. Veterinary services should not be considered as a luxury - they must be supported to avoid future disasters," Rweyemamu said.

Prevention, effective containment and the control of the most serious epidemic diseases of livestock is the prime thrust of FAO's Emergency Prevention System for Transboundary Animal Diseases (EMPRES).

More information on EMPRES is available at:

<http://www.fao.org/WAICENT/FAOINFO/AGRICULT/AGA/AGA6.htm>

REF: Food and Agriculture Organization -- Press Release, September 22, 2000.



FSIS to Shift to Industry-based Residue Control Program

USDA's Food Safety and Inspection Service (FSIS) is moving toward an industry-based residue control program to be consistent with HACCP principles and place more of the burden of avoiding or removing residue-contaminated animals on industry. Cull cow plants, for instance, may have more drugs to be concerned about than a plant that slaughters young, healthy animals.

Infrastructure needs to develop

While some critics may agree with an industry-based residue program in theory, they remain concerned that there are some practical considerations that could make this shift very difficult. For instance, industry sources have said that there are currently no private laboratories equipped to handle the level of residue tests that would have to be run - only the government has that kind of equipment firmly in place.

Technically, industry has been responsible for keeping tabs on chemical contamination since HACCP was implemented, even though slaughterhouses have no real control over the animals they purchase until they come through the slaughterhouse door. FSIS seems to have recognized the difficulty in holding the plants responsible - from a regulatory standpoint - for drugs administered to the animals without the plant's knowledge before the animals were sold. FSIS has not taken any serious regulatory action against plants that have repetitively purchased animals that later tested positive for violative residues, even though the HACCP rule already clearly places the burden of responsibility on the packinghouse.

Government pushed for policy changes

Several industry trade associations urged FSIS to change its policy, and to begin publicizing the names of repeat violators instead. That way, packing plants would know who they might want to avoid or whether they should include special stipulations in their purchasing agreements that the animals must test free of residues. The industry's definition of a repeat violator is also quite strict: more than one residue violation in the past 12 months would land a producer or dealer on the list.

REF: *Food Chemical News*, 42(31), September 18, 2000.



Human Ingestion of *Bacillus Anthracis*-Contaminated Meat Minnesota, August 2000

On August 25, 2000, the Minnesota Department of Health (MDH) was notified by the Minnesota Board of Animal Health (MBAH) of *Bacillus anthracis* isolated from a steer on a farm in Roseau County, Minnesota. The infected steer was one of five dead cattle found in a pasture on August 20. On the basis of phage typing of isolates cultured from tissues and blood samples by the North Dakota State University Veterinary Diagnostic Laboratory, *B. anthracis* was confirmed. This report describes the management of and public health response to human exposure to meat contaminated with anthrax.

On July 24, the farmer who owned the infected steer had killed, gutted, and skinned a cow that was unable to rise. A local veterinarian approved the slaughter of the cow for consumption by the farmer's family. Immediately after slaughter, the farmer took the carcass (carcass X) to a custom meat-processing plant; on July 31 and August 1, carcass X was processed. Two family members ate hamburgers made from carcass X on August 15 and steaks on August 19; three other family members ate hamburgers on August 20. A sixth member prepared the meals and also may have eaten contaminated meat. All meat was reported to have been well cooked. To investigate the possibility that they had eaten contaminated meat, the family members were interviewed by MDH on August 25. Two reported gastrointestinal illness; one reported 1 day of diarrhea approximately 48 hours after eating meat from carcass X, and the second reported 3 days of abdominal pain, diarrhea, and a temperature of 102.3 F (39.1 C) beginning 24-36 hours after consumption. Both recovered without treatment. The family was advised by MDH not to eat any more of the meat, to contact a physician, and to begin antibiotic prophylaxis with ciprofloxacin (500 mg, orally, twice daily).

On August 29, samples of carcass X tested by the MDH Public Health Laboratory (MDH PHL) were found to contain gram-positive bacilli on microscopic examination. *B. anthracis* contamination was confirmed at MDH PHL and the U.S. Army Medical Research Institute for Infectious Diseases through culture on blood agar, presence of a capsule, lack of motility, gamma-phage test, and fluorescent antibody to cell wall polysaccharide and capsular antigens. On the basis of this exposure to meat highly contaminated with *B. anthracis*, the family was advised to continue chemoprophylaxis, and vaccination with anthrax vaccine was initiated.

The Minnesota Department of Agriculture (MDA) contacted the custom meat processing plant on August 28 and placed a hold on all meat processed after carcass X. On August 29, MDA inspected the plant; sanitation practices were satisfactory. Seven carcasses had been processed after carcass X. Owners of meat from the carcasses were advised not to eat any of the meat and were asked to return meat to a central location for incineration; all the meat products were accounted for and none had left Minnesota. Samples from the other carcasses and environmental swabs collected after plant cleaning tested negative for *B. anthracis*.

Editorial Note: Anthrax is a zoonotic disease caused by the spore-forming bacterium *B. anthracis*. Human disease usually occurs through cutaneous exposure to infected animal tissue or products. Rarely, inhalation or ingestion of *B. anthracis* spores also leads to anthrax. In the United States during the early part of the 20th century, approximately 130 human cases occurred annually; two cutaneous infections have been reported since 1992.

Before this exposure, no animal anthrax cases had been reported in northern Minnesota since recordkeeping began in 1909. However, in adjacent areas of North Dakota during 2000, 120-150 cattle have died of anthrax, and 11 farms have reported anthrax-related cattle deaths in nearby Manitoba, Canada.

Gastrointestinal anthrax in humans occurs 1-7 days after eating raw or undercooked meat from infected animals, and two forms of gastrointestinal disease have been reported. Disease affecting the distal gastrointestinal tract results in nausea, anorexia, and fever followed by abdominal pain and bloody stool. The case fatality rate among reported cases ranges from 25%-60%. Gastrointestinal anthrax never has been documented in the United States because livestock are vaccinated for anthrax in areas where the disease is endemic; animals routinely are inspected by federal and state meat inspectors before, during, and after slaughter; and raw meat is eaten infrequently. Anthrax has not been documented

among the persons exposed to *B. anthracis*-contaminated meat described in this report; however, a serologic test to determine presence of infection is pending.

Limited experience with gastrointestinal anthrax complicates recommendations for use of postexposure prophylaxis. An extended duration of therapy is recommended for inhalational exposure because of the persistence of spores resistant to the action of antimicrobial agents. Upon cessation of chemoprophylaxis, such spores can cause disease several weeks after exposure. No evidence supports the existence of persistent spores associated with gastrointestinal forms of the disease; however, the meat consumed by the family in this report was highly contaminated with *B. anthracis*. Although possible interventions range from close observation to antibiotics alone to antibiotics with vaccination, because the family was at high risk for anthrax infection, management consisted of an extended course of ciprofloxacin combined with administration of anthrax vaccine.

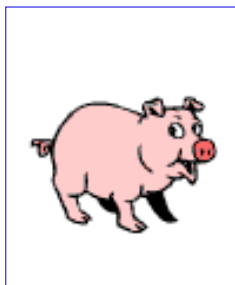
Federal-inspected and state-inspected animal processing facilities are required to perform intensive cleaning after contact with an anthrax-infected carcasses; veterinary inspection is not provided at custom meat processors. Slaughter house workers who may be exposed to an anthrax-contaminated carcass should receive medical evaluation for symptoms and for possible treatment. Management of anthrax in livestock should include 1) quarantine of the herd; 2) removal of the herd from the contaminated pasture, if possible; 3) vaccination of healthy livestock; 4) treatment of symptomatic livestock; and 5) disposal of infected carcasses, preferably by burning. Bedding and other material found around the carcass (e.g., soil) should be incinerated with the carcass and buried.

Veterinarians notified of sudden death in an animal or of an animal unable to rise should consider anthrax as a diagnosis, especially in areas where anthrax is endemic. However the potential risk for animal anthrax exists in all areas of the United States. Vaccination of livestock in areas where anthrax is endemic is the most effective method of prevention in animals and humans. Cases of anthrax in animals and cases of suspected human exposure should be reported immediately to the state health department, federal animal health officials, and to CDC's National Center for Infectious Diseases, Meningitis and Special Pathogens Branch, telephone (404) 639-3158.

REF: *Morbidity and Mortality Weekly Report*, 49(36), September 15, 2000.



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