Regulatory Services News

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Secure Handling of Ammonium Nitrate Program

Over the past few years there has been discussion on Ammonium Nitrate (AN) regulations. Under the Chemical Facility Anti-Terrorism Standards (CFATS), AN was one of over 300 selected as chemicals of interest. Facilities determined by U.S. Department of Homeland Security (DHS) to be high-risk under a facilities "Top-Screen" must meet additional security-related requirements under CFATS.

The Secure Handling of Ammonium Nitrate Program is an act of Congress unrelated to CFATS. On October 29th the DHS issued a proposed rulemaking notice on the secure handling of AN. Comments will be accepted through December 29, 2008. DHS is proposing the following:

- Require AN facilities and prospective purchasers to apply for registration numbers from DHS in order to sell, transfer, and/or purchase AN.
- AN facilities would have to verify that potential AN purchasers are registered with DHS.
- Require all AN facilities to keep AN sale or transfer records for at least 2 years after each transaction.
- Report theft or loss of AN to Federal law enforcement authorities within one calendar day of discovery.
- DHS would conduct or oversee regulatory compliance inspections and audits of AN facilities' records, monitor compliance, and to deter or prevent misappropriation of AN for terrorist acts.

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Ammonium Nitrate Legislation
Continued from front page

Distributors and retailers are urged to send comments that will provide the most assistance to DHS in this rulemaking. Comments should include, but are not limited to, the following:

a. submission of registration applications (e.g., whether applications should be submitted electronically or in paper form; whether applications should be available only through DHS or through Local Cooperative Extension Service Offices or at US Post Offices).
b. technical capabilities (e.g., access to computers; access to Internet; average level of computing skills; frequency of use of integrated Information Technology systems) of AN manufacturers, distributors, sellers, and end-users.
c. DHS distribution of AN registration letters or certificates (e.g., whether DHS should use email or regular mail).
d. a verification process for registrations and AN purchases, including methods for verifying the identity of any AN purchaser, as well as the identity of designated agents purchasing AN on behalf of registered AN purchasers.
e. detonability of AN at certain concentrations, including research being conducted concerning the detonability of AN.
f. how likely AN fertilizer users would be to use an alternative fertilizer that is potentially less detonable, such as, for example, *Sulf-N 26 Fertilizer Process and Product* (ammonium sulfate nitrate fertilizer) which DHS recently ''designated'' as a Qualified Anti-Terrorism Technology (QATT) pursuant to 6 U.S.C. 441 –444 (the Support Antiterrorism by Fostering Effective Technologies Act of 2002, or SAFETY Act). *See http://www.safetyact.gov.*
g. how best to conduct or oversee regulatory compliance inspections and audits of AN facilities' records to ensure that regulated facilities are properly maintaining records, to monitor compliance with the requirements of Section 563, and to deter or prevent misappropriation of AN for terrorist acts.
h. economic impacts (long-term and short-term, quantifiable and qualitative) of the implementation of section 563,including potential impacts on State, local, and tribal governments of the United States; potential impacts on agribusiness, including AN manufacturers, importers, packagers, distributors, retailers, and end-users including farmers (e.g., whether current AN purchasers would likely reduce their AN purchases as a result of a new regulatory regime); and potential impacts on small businesses.
i. monetary and other costs anticipated to be incurred by U.S. citizens and others as a result of the new compliance requirements, such as the costs in time and money that an individual may incur to obtain an AN registration. These costs may or may not be quantifiable and may include actual monetary outlays, transitional costs incurred to obtain alternative documents, and the costs that will be incurred in connection with potential delays at the point of sale.
j. a possible fee structure to address some or all of the costs of this new program, such as registration, TSDB checks, and issuance of registration numbers.
k. benefits of this rule making.
l. any alternative methods of complying with the legislation.
m. best methods/processes for interacting with state and local governments regarding AN security.

DATES: Written comments must be submitted on or before **December 29, 2008**.

ADDRESSES: Identify comments by using docket number 2008–0076, by one of the following methods:

- *Electronic:* Federal eRulemaking Portal: *http://www.regulations.gov.* Follow the instructions for submitting comments.

- *Mail:* U.S. Department of Homeland Security, National Protection and Programs Directorate, Office of Infrastructure Protection, Infrastructure Security Compliance Division, Mail Stop 8100, Washington, DC 20528.

To view the whole notice, go to Regulatory Services web site and look for Homeland Security Proposal for the Secure Handling of Ammonium Nitrate: http://www.rs.uky.edu

S. McMurry
Inspection Program

Renewal of Seed Registrations and Permits

Renewal applications for annual seed registrations and permits will be mailed in December. Required applications will be mailed to each location's address of record based on current permit and/or registration status.

The Kentucky Seed Law requires that a seed dealer registration be obtained if a location sells agricultural seed at retail in container sizes of 40 pounds or more. Non-certified custom seed conditioners are also required to obtain a registration. The Law also requires that a permit to label be obtained if you label agricultural seed and/or mixtures of agricultural seed. A second permit to label is required if you label vegetable seed, flower seed, or combination seed-mulch/fertilizer products. The fee for each of these permits is $25.

Locations may require multiple applications as some may sell at retail, label and a few also custom clean non-certified seed. If a single location requires more than one application, but only one permit is involved, the fee is $25. All applications must be filed but only one $25 fee is required.

Please complete and return your application(s) promptly. Required fees will be written on your renewal notice. Please send only the amount indicated. In most cases, the required fee for all applications mailed to a single location is $25. Thank you in advance for your prompt response. Questions about the permit/registration process can be directed to the seed program at 859-257-2785 or dbucking@uky.edu.

D. Buckingham,
Seed Regulatory Program

Fertilizer Registration for 2009 in Kentucky

All Kentucky fertilizer registrations and licenses expire on December 31, 2008 and must be renewed to legally sell fertilizer in the state for 2009. Renewal notices to all current Kentucky registrants/licensees have been mailed. The renewals list all products registered in the state for 2008, all licenses approved for 2008, and instructions for completing the task.

Each company was mailed a current registration/licenses status in June 2008, so renewals will be an update from that report.

BE ON THE LOOK-OUT FOR YOUR RENEWAL NOTICE.

As always, if you have questions
call: 859/257-2785,
FAX: 859/257-9478, or
email: June.Crawford@uky.edu.

Tennessee Valley Authority (TVA) Contributions to the Fertilizer Industry

The Tennessee Valley Authority (TVA) not only offered (and still offers) electricity to the rural areas of the Valley (most people have heard of this) in the early 1930's but also conducted world class scientific research in chemical engineering and agronomy. In addition, TVA personnel in 1985 began publishing the National Fertilizer Use Statistics and developed the first computer program to implement the Uniform Fertilizer Tonnage Reporting System (UFTRS) of the Association of American Plant Food Control Officials (AAPFCO). It is still in use by a majority of states in its updated form.

All control officials and the fertilizer industry owe much to those pioneers at TVA. I had the privilege of spending one week at TVA during my masters work at UK and saw first-hand the agronomic and fertilizer development work that was under way. I hope the accompanying article will be helpful in understanding TVA's most significant contribution to fertilizer development and use not only in the Valley but nationally and internationally.

D. Terry
Retired, Fertilizer Regulatory Program

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TVA Fertilizer Technology Used Worldwide-But Few New Products since 1970s

$41 Million in TVA Research Returned $57 Billion to the World – IFDC Officials Call for New Generation of Fertilizer Research

About 75% of fertilizers and fertilizer technology used around the world today were developed or improved during the 1950s to 1970s by scientists and engineers at the Tennessee Valley Authority (TVA) in Muscle Shoals, Alabama, United States, says John Shields, a former TVA official. Shields in now Interim Director of the IFDC Research and Market Development Division.

"An investment of $41 million in fertilizer research through 1981 returned an incredible *$57 billion* to U.S. agriculture," Shields says. "That doesn't include benefits of the technology to the rest of the world."

But inadequate public funding caused closure of the TVA fertilizer program in the early 1990s. Today, publicly funded fertilizer research and development has essentially ceased-and so has the flow of new and more efficient fertilizers and fertilizer manufacturing technologies.

TVA developed 75% of the fertilizers used worldwide today - but research and development in fertilizer technology has almost ceased since the program closed in the early 1900s.

Dr. Amit Roy, IFDC President and CEO, says "TVA's fertilizer program is recognized as one of the most effective research and development programs of any U.S. agency. Its benefits to the world far outweigh the public investment that the United States made in fertilizer research and development.

"It's time to launch a radical initiative to develop a new generation of energy-efficient fertilizers to help avert hunger and famine."

TVA Achievements

TVA developed high-analysis fertilizers with high nutrient content as well as more efficient manufacturing process. The fertilizers include urea-related products, diammonium phosphate (DAP), triple superphosphate (TSP), sulfur-coated urea, and liquid fertilizers. TVA improved the manufacturing process for ammonium ni-

trate and other products that help commercial producers provide efficient fertilizers to farmers worldwide. TVA's ammonium-granulation and bulk-blending technologies improve the efficiency of the manufacture of many mixed fertilizer grades. TVA generated most of the fluid fertilizer and dry bulk-blending technology used in the United States today.

"TVA technology fueled the sweeping advances of U.S. farmers in the food and fiber production in the 60s to 80s," Shields says. Today, fertilizers are responsible for more than a third of total U.S. crop production.

"The $57 billion return from a $41 million investment included about $49 billion from use of high-analysis fertilizers and $8 billion from process development and improvement. That is a benefit: cost ration of more than $20 to $1."

"TVA followed promising new fertilizers from conception to production to national acceptance by farmers and the fertilizer industry," Shields recalls. "Its program was based on fundamental research, followed by process development and technology transfer."

After agronomic tests and pilot plant production proved that new TVA fertilizer product or manufacturing process performed well, TVA produced enough tonnage to introduce it to U.S. agriculture. "TVA then stopped work on that project and moved to develop newer and more promising technologies," Shields says.

Calls for New Fertilizer Research

Dr. Norman Borlaug, 1970 Nobel Laureate, says, "I am concerned about the state of the fertilizer industry itself. With the price of energy increasing, we need to find cheaper, more effective ways to nourish food crops. The price tag for increasing productivity in Africa will be quite high. The fertilizer industry needs to do everything in its power to minimize that cost. Farmers are paying way too much for fertilizer products because we are transporting millions of tons of material that is not nutrient and because much of the nutrients in applied fertilizers are never used by the crop. Nutrient losses to the environment are high with consequences for global warming and water pollution."

"Work should begin now on the next generation of fertilizer products using advanced techniques such as nanotechnology and molecular biology, especially in conjunction with plant genetics research. 'Smart' fertilizer products that will release nutrients only at the time and in the amount needed should be developed." Borlaug served on the IFDC Board of Directors from 1994 to 2003.

"The world needs a major research effort to improve the effectiveness of fertilizer production and use," says Peter McPherson, President of the National Association of State Universities and Land Grant Schools (NASULGC) and current Chairman of the IFDC Board. "Fertilizer is a commodity industry and it is unlikely the industry alone will undertake the research. Some public investment is probably required."

During the U.N. Food Summit in June 2008 in Rome, more than 180 world leaders addressed the food crisis and stressed the urgent need "to decisively step up investment in science and technology for food and agriculture."

IFDC has six pilot plants for research and training in fertilizer development and production.

IDFC Facilities

"The need for increased food is escalating, but new agriculture technology is not keeping pace," Roy says. "An effective research program to develop a new range of fertilizers should be a key element of any long-term strategy to alleviate the food crisis."

"Most fertilizer products used today were developed when energy seemed abundant and cheap. But with rising process we should develop a new generation of fertilizer products that use plant nutrients more efficiently."

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2008 Corn and Soybean GMO Screen

There are emerging markets in Kentucky for corn and soybeans that are not genetically altered. These 'conventional' or GMO-free grains are used for production of feed, food products, and distilled products sold not only here in the U.S., but also abroad. To ensure seed stock offered for sale in Kentucky that may be purchased for production of these GMO-free grains are actually free of unintended traits, our seed laboratory began an initial screening of non-GMO seed this spring.

A lateral flow strip system that detects different insect and herbicide tolerance traits was used for the screen. This test system is the same or similar to methods in use at grain elevators to screen non-GMO contract grain. Test strips are designed to detect traits for YieldGard® corn borer (Cry1Ab/Bt11) and rootworm (Cry3Bb); Herculex® I (Cry1F) and RW (Cry34) for cutworm, corn borer and armyworm; LibertyLink® (T25); StarLink™ (Cry9C); and Roundup® (Event 603). Soybeans were tested for Roundup® sensitivity.

It needs to be understood that this testing methodology (a lateral flow immunoassay) is a qualitative test, primarily used to determine trait presence or absence. With specialized equipment, it is, however, semi-quantitative and approximate levels of the trait below 5% can be determined. Sensitivity is trait-dependent, ranging from detection of 1 kernel in 100 to 1 in 800. Other testing methodologies that are quantitatively accurate for Bt traits are not currently available to our laboratory. The laboratory does routinely conduct quantitative glyphosate (Roundup®) and sulfonylurea (STS®) tolerance analyses using bioassay methods.

This initial screen was designed for laboratory staff to become familiar with the testing capabilities and limitations and also to develop expertise in sample preparation and interpretation. Particulars observed about the testing system will serve the program well in future testing. We learned that labeling of sampled products isn't always as definitive as it should be as to whether the product offered for sale is actually free of any GMO traits. A number of samples initially thought to be GMO-free actually tested positive for one or more of the GMO traits tested.

We will continue to screen non-GMO corn and soybean seed products this spring. We will discontinue StarLink™ testing in the future as all samples analyzed tested negative and supplies for this test method are now unavailable. (See sidebar for more StarLink™ information.)

Preliminary studies indicate this test method is reliable and can be used as another tool to provide consumer protection and awareness. If you have questions or comments about this project or test methods please contact David Buckingham (dbucking@uky.edu) or Cindy Finneseth (Cindy.Finneseth@uky.edu) via email or phone (859-257-2785).

C. Finneseth
D. Buckingham
Seed Program

KSIA Winter Meeting

The Kentucky Seed Improvement Winter Meeting is tentatively scheduled for February 5-6, 2009. Again this year, the meeting will be held at the Marriott-Downtown Louisville in conjunction with the Kentucky Feed and Grain Association.

For more information about KSIA or the winter meeting, contact:

Kenny Hunter , KSIA Secretary/Manager
phone: (859) 351-5325 or email: khunter.ksia@gmail.com

StarLink™ Timeline

2000 – Although authorized for use only in animal feed, human allergenic potential of the Cry9C protein was noted. Aventis S.A., EPA, FDA, USDA, and the food industry began removal efforts to eliminate all StarLink™ corn from the food supply chain.

2001 – "FDA Recommendations for Sampling and Testing Yellow Corn and Dry-Milled Yellow Corn Shipments Intended for Human Food Use for Cry9C Protein Residues" was announced and subsequent monitoring of corn products ensued.

2007 – EPA draft "White Paper Concerning Dietary Exposure to Cry9C Protein Produced by STARLINK Corn and the Potential Risks Associated with Such Exposure" concluded that Cry9C protein has been sufficiently removed from the human food supply and continued testing provides no additional human health protection.

2008 – FDA withdrew guidance document "FDA Recommendations for Sampling and Testing Yellow Corn and Dry-Milled Yellow Corn Shipments Intended for Human Food Use for Cry9C Protein Residues."

More Information:
http://edocket.access.gpo.gov/2008/E8-8805.htm
http://www.starlinkcorn.com/

Biotech Primer*

Genetic Engineering - Selective, deliberate alteration of genes (genetic material) by man. Broadly, manipulation and alteration of genetic material of an organism to allow it to produce proteins with properties different from those of the traditional or to produce entirely different (foreign) proteins altogether.

GMO – Genetically Modified Organism, Genetically Manipulated Organism

Trait – A characteristic, shown in the phenotype (physically). Many traits are the result of single gene expression, but some are polygenic (result from simultaneous expression of multiple genes).

Event – Each instance of a genetically engineered organism. For example, the same gene inserted by man into a given plant genome at two different locations (i.e., loci) along that plant's DNA would be considered two different "events." Alternatively, two different genes inserted into the same locus of two same-species plants would also be considered two different "events."

Brand/Trademark – Unique or exclusive word or phrase used to market or show ownership of a product (eg YieldGard®, Herculex®).

Bacillus thuringiensis (B.t.) – Group of rod-shaped soil bacteria found all over the earth, that produce "cry" ("crystal-like") proteins which are ingested by and toxic to certain classes of insects (corn borers, corn rootworms, mosquitoes, black flies, some types of beetles, etc.), but are harmless to all mammals. These "cry" protein genes have been used by scientists since 1989 to confer insect resistance to certain agricultural plants. For example, *B.t. kurstaki* kills European corn borers following ingestion via perforation of that insect's gut.

*From: *Glossary of Biotechnology Terms* by Kimball R. Nill (http://biotechterms.org/)

The NCIMS to Convene in Orlando, FL April 17-22, 2009

The National Conference of Interstate Milk Shipments (NCIMS) meets biannually to review the dairy industries' protocols for sanitary practices. Included in this review is the Pasteurized Milk Ordinance (PMO) and supporting documents. These documents impact practically every aspect of the dairy industry including farm practices, lab procedures, processing and transportation.

The main thrust of the Conference is to deliberate proposals submitted to modify these protocols. Proposals may be submitted for consideration by both public and private sector representatives and are due **January 28, 2009**. Conference participants include state and federal regulators, processors, producers, allied dairy industry personnel and academia. If you are interested in submitting a proposal or attending the conference, visit: www.ncims.org.

C. Thompson,
Milk Program

Milk Transport Security and Traceability Demonstration a Big Success!

Since January 2006, faculty and staff at the University of Kentucky (UK) College of Agriculture have teamed with researchers from Western Kentucky University (WKU) and the University of Louisville to develop a prototype bulk milk transportation security system. The project was funded by the Department of Homeland Security through the National Institute for Hometown Security located in Somerset, Kentucky. The College of Agriculture team includes representatives from Departments of Animal and Food Sciences, Biosystems and Agricultural Engineering (BAE) and Regulatory Services (RS). Additionally, dairy industry representatives have been working closely with the research and development team to provide input on the system.

The system has been developed to provide enhanced security, accountability and improved record-keeping for the dairy industry. Dairy industry collaborators represent milk transportation companies, milk marketing agencies, processors and tanker manufacturers and distributors. Their participation ensured the system provides beneficial information for all users and that it has practical application in our current milk transportation protocols.

On October 9th, the College of Agriculture hosted a demonstration of the Milk Transport Security and Traceability System at the Fayette County Cooperative Extension Office in Lexington. The event was attended by over 150 people from 25 different states and provinces. Congressman Harold "Hal" Rogers from Kentucky's Fifth Congressional District and UK President Lee Todd attended and discussed the importance of leveraging the talent of Kentucky's universities and colleges to develop solutions for important areas such as bulk food transportation. After welcoming comments from Nancy Cox, Associate Dean for Research and Director of the Kentucky Agricultural Experiment Station, the audience heard presentations from food and dairy industry professionals on the importance of being proactive in the areas of dairy food safety and defense.

A comprehensive demonstration of the system followed the guest speakers. Key system components include a small, user friendly handheld computer device that a hauler uses to enter milk hauling records. The handheld device provides the hauler with the most up-to-date information regarding the tanker and farm pick-up information. The tanker is outfitted with a computer processor to store milk and security data. Other key tanker components include a GPS unit, dome lid and rear door locks, a key pad (to enter security codes when the handheld device is not available) and temperature sensors for the sample cooler and cargo.

Brian Luck (BAE) provided attendees with a close up system demo while Ryan Moore (WKU) used the handheld computer to demonstrate interaction with the truck. A detailed discussion of the handheld's operation and database functions were provided by Fred Payne (BAE) and Chris Thompson (RS). Program attendees left the day with an understanding of how haulers, milk marketing agencies and processors can interact with the system and generate useful reports such as milk tickets, producer milk house records as well as trace-back and security analysis reports.

The research and development team received funding for continuation of their efforts from DHS through NIHS for $1.2 million. Objectives of the continuation project include optimization of the hardware and electronics for the security monitoring system, development of an enterprise quality data server system, development of commercial quality web-based software and demonstration of the optimized system for a one-month period.

The national demonstration showed that the prototype has the potential to meet the needs of dairy processors, milk marketing agencies and milk transportation companies. The system enhances milk transport security, provides a system for tracking bulk milk, provides an information management system for the dairy industry and will significantly add to the security infrastructure of the nation for bulk food transport. For more information, visit the milk program's website at www.rs.uky.edu or contact Chris Thompson (Chris.Thompson@uky.edu).

C. Thompson,
Milk Program

Feed Mycotoxin Assessment

Feed safety is important to producers and manufacturers alike. Kentucky feed manufacturers use many feed ingredients from grain and oilseeds. Regulatory Services routinely monitors the mycotoxin levels in these types of ingredients.

Grain infected by mold may contain toxic fungal metabolites called mycotoxins. The presence of mycotoxins in feed may cause illness or death in animals. Mycotoxins are chemical compounds produced by fungi while growing on organic substances such as corn and peanuts. Droughts and accompanying high temperature during grain production may result in fungal invasion and mycotoxin production. Mycotoxin production may also occur during storage. Aflatoxins are the most prevalent. Fumonisin is another toxin produced by certain fungi and is frequently present in grains.

For effective mycotoxin management in feeds, measurement of the concentration in a load or lot is required. However, this is very difficult due to errors associated with each step of the process (i.e., sampling, sub-sampling, and analytical method).

Variability in sampling grain for mycotoxin analysis occurs because (1) individual contaminated kernels do not contain equal amounts of toxin, (2) not all kernels contain toxin, (3) non-uniform distribution of contaminated kernels within the lot and (4) the ratio of contaminated and clean kernels is not uniform. To help overcome sampling variability the probe number and quantity collected must be increased, samples ground properly, and sub-samples accurately obtained for analysis.

Proper sampling is essential for obtaining reliable test results. Stream sampling is one of the most effective ways to obtain a representative sample. Before a trailer or railcar is loaded or unloaded, a grain probe may be used. Take a representative sample with several probes following a specified pattern. The sample size should usually be between 10-20 pounds. Sealed plastic bags should not be used to ship or store mycotoxin samples.

The Analytical Laboratory receives samples from inspectors designated for mycotoxin analyses. To minimize fungal activity, sam-

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ALL I REALLY NEEDED TO KNOW ABOUT FERTILIZER REGULATION I LEARNED IN KINDERGARTEN

In 1974 I was graciously hired by Dr. Herb Massey, Director, Division of Regulatory Services, as the Coordinator of the Fertilizer Regulatory Program. He took quite a risk in the hire because I had hardly even heard of fertilizer regulation much less BEEN a fertilizer control official. As I bid a final goodbye to the Division and the program (that I learned through "on the job" training), I would like to leave a few final thoughts that may or may not be of any benefit. After some meditation, the book by Robert Fulgham came to mind as a guide to put my thoughts in perspective. Even though I did not go to kindergarten, please allow me the privilege to extrapolate.

"All I really need to know about how to live and what to do and how to be I learned in kindergarten. Wisdom was not at the top of the graduate school mountain, but there in the sand pile at school."

These are some of the things I have learned over the years — some came easy, but some left indelible impressions.

***Play Fair**

Playing fair is the most important lesson learned. Soon after beginning the job, I discovered a treasure of information and guidelines in talking with my predecessor, Bill Huffman, and to Herb Massey; and, in publications of the Association of American Plant Food Control Officials (AAPFCO), the Association of Official Analytical (Agricultural) Chemists (AOAC), the Association of Southern Feed, Fertilizer, and Pesticides Control Officials (ASFFPCO), Kentucky Agricultural Experiment Station, and others. Always prominent were these two "permanent" and vital principles:

(1) the regulatory program must protect the consumer of fertilizers from misleading, fraudulent, and erroneous labeling, and,
(2) the regulatory program must also protect the legitimate fertilizer industry from those who would promote and sell fraudulent products.

By diligent pursuit of the former, the latter followed. The consumer/farmer is the primary entity the fertilizer regulatory program serves; however, by carefully inspecting labels and insisting on a standard format with no misleading or fraudulent claims, the second principle is accomplished. I considered myself the fertilizer consumer's advocate and most everything else flowed smoothly from that. The fertilizer law is truly a "Labeling Law".

These were my guiding principles of "Playing Fair" over the years and, hopefully, mostly successful.

***Don't Hit People**

Of course, my interpretation on this is to not show partiality to one person over another. Don't "pick" on or "hit" one company. It has been my experience that all companies will do what is right and required if they know what to do. Our regulatory program cannot be everywhere all the time so we must depend on the industry to do the right thing — voluntary compliance. Therefore, beginning early in my tenure, we would conduct workshops, training sessions, and offer direct assistance to companies with problems. I noted that the deficiency rate of official fertilizer samples declined in each year following a fertilizer blending workshop which confirmed the benefits of training company personnel in how to comply with the law. The overall deficiency rate of official samples in the early 1970's was around 30%, with bagged samples quite a bit higher. The record for FY 2008 was an overall deficiency rate of 8% with bags at 19% which indicates that the Kentucky fertilizer industry is doing an excellent job in producing quality fertilizers for Kentucky consumers and has improved over the years.

***Share Everything**

There are two major sets of fertilizer data that we "share" with our clientele: (1) the chemical analysis of our official samples and (2) fertilizer tonnage distributed in the state. All the information collected by the fertilizer program is available for public view except the tonnage records of individual registrants which is protected by law; however, the two publications noted are the most widely distributed.

One of the prime information outputs and a significant input into voluntary compliance in our fertilizer regulatory program is the publication of analytical results from official samples taken by the program. Publication of analysis results of official samples has been a key component of fertilizer regulatory programs from the very first. The analysis of our official fertilizer samples are published annually in a Regulatory Bulletin by the Division of Regulatory Services and distributed to all registrants and to anyone requesting a copy. They are also available on the Division's website (www.rs.uky.edu). It has been noted by others and also by our program that a registrant with a "poor" official sample record will suffer while one with a good record will prosper.

The only source of the amount of fertilizer used in KY is from quarterly tonnage reports submitted by Kentucky fertilizer registrants. These reports are published quarterly and show the distribution of fertilizers by county and by major fertilizer materials and grades. The tonnage represents what registrants report and on which they pay the inspection fee of $0.50 per ton. Some uses of these data would be by companies to estimate their market share and by extension personnel to track usage compared to soil test recommendations. Kentucky's data is also combined with that of all the other states and becomes a part of the national fertilizer use database.

***Clean up your own mess and Say you're sorry when you hurt somebody**

Over the years I have issued a few erroneous analysis reports or have made incorrect decisions based on insufficient information. In each case I felt obliged to take responsibility for the errors and to write letters or make phone calls to the persons affected and to apologize for the errors. I did not allow or expect someone else to "clean up my own mess" and I always personally apologized for the errors.

***Live a balanced life - learn some and think some and draw and paint and sing and dance and play and work every day some**

For several years after I started my tenure I rarely took vacations and thought that I had to work everyday — even some weekends. Soon I realized this was not good for me or my family so I began to take a day off now and then to spend time with my family. To my surprise, the fertilizer regulatory program ran just fine without my being there every day! Exercise also became an integral part of my day and refreshed my outlook on the work. Sometimes during a long run I would think of certain problems I was dealing with and before the end of the run would have a solution.

There are also other ways to interject "learning" and diversity into work. I chose participation in professional organizations, primarily AAPFCO, AOAC, and ASFFPCO. Not only did that offer opportunities to promote uniformity in fertilizer regulation, nationally and internationally, but also to foster lasting friendships with persons from all the states.

Each of us has a "clock" and an internal "compass". The clock represents the time we have and the compass represents our values - our principles - our "true" north. The higher the correlation between how we spend our time and our values the more productive and satisfying our lives will be. Steve Covey, et al., in their book *"First Things First* "encourage us to integrate our physical, social, mental, and spiritual needs in their discussion of "To Live, To Love, To Learn, and To Leave a Legacy" and by doing so create a passion for life. I have achieved a limited amount of this balance and found it very uplifting.

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Everything you need to know
Continued from p. 11

***When you go out in the world, watch out for traffic, hold hands, and stick together**

I soon realized why my position was termed "Coordinator" of the fertilizer regulatory program. I could not do field inspection, take samples, analyze the samples, do the calculations necessary for reports, register all fertilizers, make sure all tonnage reports were correct, and take care of the other administrative work all by myself. We had to "stick together". It had to be a team effort and my job was to make sure all aspects of the program worked together in harmony and that no one on the team got "run over in traffic" and that all were "holding hands" and getting the job done. I discovered synergy in the interdependence of the program's various components. The activities of the field inspectors, the fertilizer laboratory, and the administrative staff had to be coordinated and integrated synergistically which resulted in a fertilizer regulatory program that accomplished its mission, was a coherent entity, complied fully with the law; and, exceeded the sum of its individual parts.

***Put things back where you found them**

My thoughts here drift to history especially why and how fertilizer laws came into being. The US National Archives slogan is "The Past is Prologue", which I think means that what has happened in the past will and should influence what you are doing and what you plan to do in the future. It *does not mean* that you are bound to the past and must not change, but, it does mean that one must be cognizant of the past to assure a successful future. The first fertilizer laws were passed in the late 1800's in response to certain persons who were fraudulently selling worthless "trash" as fertilizers. Labeling was non-existent, misleading, or erroneous; and, farmers were being thwarted and discouraged from adopting and using new "fertilizer" technology. Early laws basically required fertilizers to be clearly and truthfully labeled; and, that samples would be taken of fertilizer found for sale and the results published so consumers would know which companies were selling properly labeled products and which were not. Our program continues in this publishing tradition.

***Be aware of wonder**

Always look beyond what you see. You may see a plant growing as a nuisance or a source of food, or as a beautiful flower. I see an almost magical organism. It is able to take a few inorganic elements from the soil, extract water from around some very small soil particles, absorb carbon dioxide from the atmosphere, and combine them with energy captured from the sun to produce our only source of food and energy. One of the "waste" products of this activity (photosynthesis) is oxygen. We animals are totally dependent upon the green plant for our sustenance while the green plant can get along quite well without us animals. All the fossil fuels we consume originated with the green plant. Incidentally, certain plants (legumes) can with assistance of certain microbes convert, almost effortlessly, atmospheric nitrogen into plant and animal useable forms. It takes tremendously high pressure and temperature and a lot of energy for humans to do essentially the same thing.

"Remember the little seed in the Styrofoam cup: the roots go down and the plant goes up and nobody really knows how or why, but we are all like that."

***Goldfish and hamsters and white mice and even the little seed in the Styrofoam cup - they all die. So do we.**

When I was younger my mortality was not "front and center" in my thinking. However, as I enter retirement I think of it more often. When that event comes we probably are not going to wish we had spent more time at our office. I have struggled with balancing my "clock" with my "compass" and I want to encourage all to work toward a synergistic relationship between your "clock" and your

"compass". I have enjoyed each day I have worked for the Division of Regulatory Services, some more than others, and I wish each person reading these words can say the same about their work!

David L. Terry,
Retired,
Fertilizer Program

*Source: "ALL I REALLY NEED TO KNOW I LEARNED IN KINDERGARTEN"
by Robert Fulghum.
See his web site:
http://www.robertfulghum.com/

Fulghum, R. 1988. All I Really Need To Know I Learned In Kindergarten, Villard Books.

Covey, S.R., A.R. Merrill, and R.R. Merrill. 1994. First Things First. Simon & Schuster, New York. Chapter 3.

***Appendix: Other Kindergarten Kernels**

"Warm cookies and cold milk are good for you. Don't take things that aren't yours. Wash your hands before you eat. Flush. Take a nap every afternoon. And then remember the Dick-and-Jane books and the first word you learned - the biggest word of all - LOOK. Everything you need to know is in there somewhere. The Golden Rule and love and basic sanitation. Ecology and politics and equality and sane living.

Take any one of those items and extrapolate it into sophisticated adult terms and apply it to your family life or your work or government or your world and it holds true and clear and firm. Think what a better world it would be if we all - the whole world - had cookies and milk at about 3 o'clock in the afternoon and then lay down with our blankies for a nap. Or if all governments had as a basic policy to always put things back where they found them and to clean up their own mess.

And it is still true, no matter how old you are, when you go out in the world, it is best to hold hands and stick together."

TVA and Fertilizer
Continued from p. 5

"Such innovations will require investments in research – but costs would be miniscule compared to the benefits for humanity," Roy says.

"IFDC is in a unique position to meet this challenge. We're the world's only agency with the necessary facilities and expertise. We have both the physical and human resources to do the job. IFDC has a complex of six pilot plants for research and training in fertilizer development and production plus a highly qualified team of scientists and engineers. We also have the international contacts to build support for a new, vigorous fertilizer research and development program."

"We can pick up where TVA had to cease."

Auditing Activities of the Division of Regulatory Services

Firms engaging in sales of agricultural commodities are subject to audits that pertain to the following Kentucky Statutes and associated Regulations:

Kentucky Fertilizer Law	KRS 250.361 to 250.451
Kentucky Feed Law	KRS 250.491 to 250.631
Kentucky Farm Milk Handlers Law	KRS 260.775 to 260.8451
Kentucky Seed Law	KRS 250.021 to 250.111

Approximately 1300 firms, 420 of which are located in Kentucky, sell products pertaining to the above listed Kentucky laws. All firms report sales on a calendar quarter basis. About 5200 reports are received and reviewed annually. In collaboration with Regulatory Program Coordinators, actions for discrepancies in the reports are recommended.

The inspection fees on products sold (tonnage) for regulated industries are as follows:

Industry	**Fee assessed per unit**
Fertilizer	50 cents/ton
Feed	35 cents/ton
Milk (handlers and producers)	0.5 cents/100 lb.
Seed Tags	4-24 cents/unit

H.S. Spencer
Auditor

Mycotoxin Sampling and Testing

Continued from p. 9

ples are shipped promptly to the lab. Through grinding, samples are homogenized, then a sub-sample for mycotoxin analyses is prepared. The initial analytical method uses sandwich enzyme-linked immunosorbent assay (S-ELISA) chemistry. If the sample exceeds established limits after two measurements, an official AOAC method (High Pressure Liquid Chromatography or HPLC) confirms the results. If HPLC confirms a mycotoxin concentration above established limits, the sample report will indicate a violation. Submission of a plan to minimize safety issues will be required.

Regulatory Services has several systems in place to assess mycotoxin levels in feed. It recognizes that failure to properly sample and analyze mycotoxins may result in unnecessary economic loss due to incorrect condemnation or inadvertently feeding harmful levels of mycotoxin.

Information used in this article came from AAFCO Feed Inspector's Manual, Second Edition, May 1, 2000. To download this free publication, visit the AAFCO website at www.aafco.org. Please direct questions to Frank Jaramillo, Feed Program Coordinator at 859-257-2785 or Frank.Jaramillo@uky.edu.

M. Bryant,
Analytical Laboratory

F. Jaramillo, Jr.,
Feed Program

Employee News

Dr. David Terry (right)
AAPFCO Life Member

David Terry Receives AAPFCO Life Membership

For over 34 years Dr. David Terry has been active in plant food regulation. In August of 2008, he was named a Life Member by the AAPFCO (Association of American Plant Food Control Officials) at the meeting in Nashville, TN. Dr. Terry served a term as President of AAPFCO (1993-1994) and was Association Secretary (1981-2004). He also served on numerous committees, task forces, and as an AAPFCO investigator. From 1974-present he has served as the coordinator of the Kentucky Fertilizer Law, and from 1979-present as Assistant Director of the Division of Regulatory Services. Congratulations on yet another accomplishment.

McMurry Receives AAFCO Award

Stephen McMurry, Inspection Program Coordinator, received an Association of American Feed Control Officials (AAFCO) Distinguished Service Award this past August in recognition of perseverance in getting the Inspector Certification Program on track to reality. The program is now a joint effort between FDA and AAFCO as the Feed Regulatory Certification Program. The intended outcome is to foster trained regulatory personnel with consistent inspectional activities around the nation.

Stephen McMurry (left) with
AAFCO president Ricky Schroeder

Soil Test Laboratory welcomes Kristen Hansen

The Soil Laboratory in Lexington hired Kristin Hansen into a vacant Senior Laboratory Technician position. Kristen is a recent graduate, with a B.S. in chemistry from the University of Utah. She has analytical laboratory experience, providing service to the copper mining industry where she prepared and analyzed soil and water samples. Her husband is currently attending University of Kentucky Dental School. Her husband's acceptance into dental school is what brought them from the west to the east this past July. Kristen will miss the open skies and skiing out west but is sure to find new opportunities and interests in Lexington. We welcome Kristen to the Soil Test Laboratory and look forward to her working with us to serve Kentucky producers.

F. Sikora
Soil Progarm

Winter Break Announcement

The Division of Regulatory Services will be closed for winter break Wednesday, December 24, 2008 and will reopen Friday, January 2, 2009.

The Seed Testing Laboratory will be open during the break. To arrange sample drop-off or to contact Seed Lab personnel, call (859) 257-2785, ext. 256. The seed program can also be reached by email at Cindy.Finneseth@uky.edu.

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