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## UNAPPROVED USE OF AN AGRICULTURAL CHEMICAL

Recent inquiries and communications with extension specialists and field staff report the use of certain formulations of fenthion; o,o-Dimethyl 0 - 3 methyl - 4 (methylthio) phenyl phosphorothioate in treating dogs infected with heartworm microfilariae.

Several years ago an approved formulation of fenthion for microfilariae was marketed by an American veterinary drug company, but was withdrawn by the Food and Drug Administration because of an unacceptable number of toxic fatalities.

The insecticide formulation in question is Spoton<sup>®</sup> 20% ready-to-use solution registered for use in controlling cattle grubs on beef cattle. The use of this product on dogs for heartworm microfilariae is inconsistent with the registered label and labeling, and appropriate penalties are prescribed for noncompliance. Some legal action has been reported against veterinarians and lay persons.

Other unapproved and hazardous practices associated with the use of this product for treating dogs are repackaging and dispensing to clients for use at home. The use, handling, and storage of this class of chemicals and drugs in the home environment are often unsafe and should be discouraged.

Also, dosage rates are experimental and vary with user experience or recommendations shared among users, both lay and professional. No legal label can be affixed to the repackage container. This insecticidal chemical is a cholinesterase inhibiting organophosphate. Effective antidotes are available to veterinarians and physicians.

The best recommendation for use of all pesticide chemicals is to read the product label and labeling carefully, and follow the directions for use and dosage rates.--*T. P. Siburt, Extension Specialist, VA-MD Regional College of Veterinary Medicine, Virginia Tech, Blacksburg, VA*

Editor's Note: The use of fenthion as a pour-on for dogs was discussed on page 5 of last month's issue of Virginia Veterinary Notes. If you missed the warnings given in that article, it is hoped that the above note will bring them to your attention.

## SWINE TOXOPLASMOSIS

Much attention was originally given to pork and lamb as the primary source of human toxoplasmosis until the oocyst was found in cat feces and the life cycle of *Toxoplasma gondii* was fully defined in the cat. The ingestion of infected meat was soon considered to be of less concern, and accidental ingestion of sporulated oocysts from cat feces contaminating the environment is currently considered to be the major source of human infections. New evidence, however, suggests that the role of the cat, though still important, may be overemphasized and that handling or ingesting infected meat, as originally described, is still of considerable significance in the transmission of *Toxoplasma* to man and may, under certain conditions, prove to be more important in *Toxoplasma* transmission than the role of cats.

A recent investigation has confirmed the impression gained from an earlier Georgia seroepidemiologic survey that environmental conditions under which swine are raised may significantly affect the rate of *Toxoplasma* infection. Hogs in herds maintained under confinement had a lower prevalence for antibodies to *T gondii* on the initial survey than did those swine raised in the more conventional manner.

Also, this investigation has shown that young pigs have antibodies to *T gondii* prior to 8 weeks of age and that these antibody concentrations persist on a herd basis and increase as the animals become older. If persistent antibody in a herd indicates infection, then the findings of this preliminary epidemiologic investigation would indicate that swine become infected early in life and that this infection will persist for a considerable time.--D. W. Dreesen and J. S. Lubroth in *8th International Symposium of the World Association of Veterinary Hygienists*; Dublin, Ireland; Aug. 30-Sept. 4, 1981; as reported in The Federal Veterinarian; March, 1982.

## KITTY HAS IMPORTANT USE IN POULTRY HOUSE

The poultry housecat can protect the house against mice, rats and some other pest problems "better than any other system in use today," according to Richard Ammon at DeKalb AgResearch, Inc.

As farm managers know, he said, mice and rats can destroy eggs and feed as well as egg gathering belts, egg cartons, cases and fillers, watering equipment, insulation, siding, wiring "and a lot more." But cats not only catch and kill mice and rats, they keep them away, he noted.

In open units, Ammon added, cats keep free-flying birds from nesting, which can be particularly important at this time of year in preventing the introduction of the northern fowl mite.

Ammon said the poultry housecat should be provided a box-bedding area, commercial catfood, a watering area and a liter box. To protect against diseases, he said, a live vaccine should be used at nine weeks and repeated annually for cat distemper, and a modified live virus tissue vaccine should be used at 12 weeks and repeated annually for rabies.--Feedstuffs; June 21, 1982.

Editor's Note: Cats have long been used for rodent control in farrowing houses, but this practice is not recommended because of the possibility of disease transmission. Atrophic rhinitis is readily transmitted from cats to swine.

#### BVM WILL REVIEW DRUG APPLICATIONS

The Bureau of Veterinary Medicine will have complete responsibility for review of all animal drug applications beginning July 11, the Food & Drug Administration announced June 30.

The drug approval process has been shared by BVM and the Bureau of Foods. The Bureau of Foods was concerned with the human safety aspects of drugs used for food producing animals, while BVM reviewed the safety and efficacy of the drugs for animals.

The merging of the two review systems under BVM was announced earlier in June by FDA Commissioner Arthur H. Hayes, Jr.

Details of the reorganization are being coordinated by Dr. Martin A. Norcross, recently appointed acting associate director for Human Food Safety, who will be responsible for the drug approval function in BVM.

Bureau of Foods staffers will be temporarily detailed to BVM to give them a chance to decide if they want to be permanently transferred. The temporary personnel transfer begins July 11 and runs for 120 days. The permanent staff will be in place Nov. 11.

The two-approval system has been criticized as functioning too slowly due to administrative delays. The decision for the transfer was made following a study ordered by Hayes and reviewed by BVM director Lester M. Crawford and BF director Sanford A. Miller.--Feedstuffs; July 5, 1982.

#### RABIES

The greatest threat of rabies to humans is by means of domestic animals which contract the disease. The use of animal rabies vaccine is, therefore, a most important element in reducing the risk to humans as well as domestic animals.

The Compendium of Annual Rabies Vaccines, 1982, list the vaccines available and their recommended use. It should be pointed out that dogs and cats can be immunized at three (3) months of age. Dogs immunized less than one (1) year of age need to be reimmunized in one (1) year, irrespective of the vaccine used; thereafter, every three (3) years if triennial vaccine is used. Cats need to be

revaccinated every year, irrespective of rabies vaccine used.\* There is no vaccine currently licensed for the immunization of wild animals, and vaccination, even with inactivated vaccine, is not recommended.

Dog and cat bites to humans require a ten (10) day quarantine to rule out human exposure to rabies from that bite. This does not mean that the dog or cat is not incubating rabies at this time. This only means that the rabies virus is not in the saliva at the time of the bite; therefore, the dog or cat cannot transmit the disease as a result of that bite.

When domestic animals are bitten by a rabid animal, the incubation period can vary considerably. Those dogs and cats that have a current rabies vaccination should be revaccinated and detained (leashing and confinement) for at least ninety (90) days. Dogs or cats that do not have a current vaccination, if bitten by a known rabid animal, should be destroyed immediately, or if detention is elected, hold the animal in an approved pound or kennel for at least six (6) months (to avoid human or animal exposure) and vaccinate against rabies at time of confinement and again at the time of release. Wild animals should be sacrificed upon suspicion of rabies and the brain examined for evidence of rabies. Also, if a human is bitten by a wild animal, the same is recommended. Quarantining a wild animal that has bitten a human is not recommended.--Earl E. Virts, M.D.; Director, Department of Public Health; Loudoun County; Leesburg, VA.

\*In a July 1, 1982, news release, Norden Laboratories announced the introduction of the first rabies vaccine giving three year protection in both dogs and cats. The vaccine is tradenamed "Rabguard TC."

#### DIARRHEA IN PIGS DUE TO PORCINE ROTAVIRUS

A number of agents are capable of causing diarrhea in pigs. These include bacteria such as E. coli and Salmonella and viruses such as transmissible gastroenteritis (TGE) virus. In recent years, it has been shown that another virus, the porcine rotavirus, can also play a role in diarrheal disease of young pigs.

Rotaviruses--so called because individual viral particles have a wheel-like appearance when viewed with an electron microscope (rota = Latin for wheel)--have been associated with diarrhea in the young of many animal species including man. Although there are similarities among the various rotaviruses, in general they tend to be species specific--that is, a rotavirus infection in swine is likely to be transmissible only to swine.

Rotaviruses are widely distributed and, based on the presence of rotavirus antibodies in the blood serum of swine, it appears that most, and perhaps all, swine herds are infected with porcine rotavirus. As a consequence, pigs are exposed to the virus at an early age. Usually this results in no disease or in only very mild diarrheal disease.

Severe disease is a less frequent occurrence and probably results from a combination of other factors in association with the rotavirus infection rather than from rotavirus infection alone. These "other factors" include other viral or bacterial infections, and stressful conditions such as chilling or unsanitary facilities.

There is evidence to suggest that rotaviruses are responsible for some cases of a common diarrheal disease of young pigs referred to as "milk scours," "white scours," or "three-week-old scours." However, it appears that other causative factors can also be involved in such scours.

Clinical disease occurs most frequently in suckling and weaned pigs, one to eight weeks of age. Disease in pigs less than one week old is uncommon. When infection occurs, most pigs within a group are affected. The affected pigs are depressed, their food intake decreases markedly, and they may be reluctant to move. These signs are followed by a diarrhea which can be profuse. The feces have a watery to creamy consistency and are yellow to light brown in color. Later, there may be yellow curd-like material in a clear brownish fluid. Loss of condition can be quite rapid. Dehydration can occur especially in younger pigs or those in which the diarrhea is prolonged. Vomiting is relatively rare. The death rate varies and, while generally low, can approach 20 percent in some outbreaks.

In mild cases the disease is of short duration and diarrhea lasts for only one to three days. More severely affected animals show signs of illness for longer periods. Recovering animals become more active and their appetite returns, although loose yellowish feces are sometimes noted for as long as one to two weeks. Adult animals usually show no signs of the disease.

Rotaviruses enter the body by way of the mouth when pigs consume materials contaminated with rotavirus-containing feces. The viruses pass to the small intestine where they infect cells covering the tiny finger-like projections, termed "villi," which are found in this part of the intestinal tract. Virus multiplication in these cells results in their destruction and as a result individual villi are shortened and blunted. Loss of villus cells interferes with proper absorption of fluids from the intestinal tract and leads to diarrhea.

Examination of pigs that die or are killed during the acute stage of the disease reveals small intestines that are distended with fluid and, therefore, are thin-walled. When the intestines are opened and the inner or mucosal surface examined microscopically, the shortening and blunting of the villi can often be detected. These changes are most pronounced in the last two-thirds of the small intestine (the jejunum and ileum). Other tissues and organs are not affected.

Rotavirus infection should be suspected as a possible cause of diarrheal disease in suckling pigs over one week old or in recently weaned pigs. However, in most cases it is not possible to make a diagnosis on the basis of clinical signs alone because TGE virus infection and also *E. coli* can cause similar signs of disease. For this reason, a veterinarian may seek assistance from a diagnostic laboratory to make a definitive diagnosis.

A number of laboratory procedures can be used to diagnose rotavirus infections, but it is essential that the proper samples are available for examination. Whenever possible, live piglets that have had diarrhea for less than 24 hours should be submitted to the laboratory. Animals that have had diarrhea for more than 24 hours

generally do not provide diagnostically useful samples even though they may actually show more severe signs of disease. This is because virus infected cells are rapidly eliminated from the body after onset of diarrhea and diagnostic tests are based on the detection of rotavirus or virus products in infected cells. If it is not possible to submit live piglets, the animals should be killed, the intestinal tract removed immediately, and sections from the front (anterior), middle, and hind (posterior) portions of the small intestine collected. Duplicate sets of the intestinal tissues should be collected and one set preserved in buffered formalin and the other by freezing. These procedures should be performed by a veterinarian.

Rotaviruses are present in most swine herds and because these are relatively resistant viruses, there are no practical means of eliminating the virus and thereby preventing exposure of susceptible pigs. However, because the virus is widespread most sows are immune to rotavirus infection and their colostrum contains antibodies against the virus. These antibodies are passed to their suckling offspring and provide varying degrees of temporary immunity. The degree of protection resulting from ingestion of colostrum antibody is related to several factors including: the level of rotavirus antibody in the colostrum, the amount of colostrum consumed, the amount of virus to which the piglets are exposed, the age of the piglets at time of exposure, and various environmental and management factors. If exposure to rotavirus occurs while the piglet has adequate levels of colostrum antibody, infection results in no, or only mild, clinical disease. It appears that this is the situation in the majority of animals. However, if rotavirus exposure occurs when antibody levels are low or if large amounts of virus are present, serious and often fatal disease can result.

In general, rotavirus infections are more common in swine herds in which there is continuous farrowing because potentially susceptible piglets are always present and the virus is thereby readily perpetuated. However, even with this management practice the incidence and severity of rotaviral disease can be reduced if the farrowing facilities are clean, dry, and warm and if the piglets are well nourished and cared for adequately.

Vaccines have been available for some time to protect cattle against bovine rotavirus infection, but these are not effective in swine. A combination rotavirus-TGE vaccine is now available to protect pigs from both diseases. This is an oral as well as an intramuscular product. Pregnant sows and gilts are given an oral dose five and three weeks before farrowing and an intramuscular dose one week before farrowing. In subsequent farrowings, sows should be given one oral and one intramuscular dose on the same day two to three weeks before farrowing. Pigs receive passive immunity from the sows by way of the colostrum. The vaccine is produced by Ambico, Dallas Center, Iowa and is available only through veterinarians.

--Robert W. Dellers, D.V.M., Ph.D.; *Veterinary Virologist; VA-MD Regional College of Veterinary Medicine; Virginia Tech; Blacksburg, VA.*

Editor's Note: Diagnostic tests are now offered in the Maryland and Virginia state diagnostic laboratories for rotavirus infection in swine.

Virginia is in the midst of a true rabies epidemic, the likes of which hasn't been seen since 1969 when there were 389 confirmed cases in the state. Aside from the rapidly increasing number of confirmed cases this year, the most significant feature is the high incidence of rabies cases in raccoons. Skunks and foxes have long been the most important reservoir for this disease in Virginia, but now raccoons have surged into the lead as the species with the highest confirmed incidence of rabies.

The statistics listed below may be of interest in appreciating the severity of the rabies problem in Virginia.

Total Confirmed Cases (all species)

1975	144	1979	20
1976	56	1980	35
1977	5	1981	167
1978	14	1982	277 (Jan. - July 10)

Breakdown by Species

<u>1981 (total)</u>		<u>1982 (to date)</u>	
raccoons	103	raccoons	245
skunks	45	skunks	15
foxes	7	foxes	7
bats	8	bats	8
cats	3	cats	1
dogs	0	dogs	2
cattle	1	cattle	0
groundhogs	0	groundhogs	2
ferretts	0	ferretts	1

Confirmed case totals have increased each month for January - June in 1982.

Loudoun, Fairfax, Fauquier, and Prince William are by far the counties most severely affected with rabies cases in the state. Culpepper and Madison are the southern-most counties with confirmed rabies in raccoons. Scott and Lee counties have had confirmed rabies cases in skunks.

No one knows why this disease has increased its incidence so dramatically or when it will subside. We can only advise pet owners to keep their dogs and cats vaccinated against rabies at intervals recommended by their veterinarians.

All animal lovers are advised not to adopt wild animals as pets or to approach or particularly to handle wild animals that they may encounter.

Rabies statistics supplied by:  
 Dr. Tom Sayvetz, Assistant State Epidemiologist  
 Virginia State Health Department  
 Richmond, VA

*Kent C. Roberts, D.V.M.  
 VA-MD Regional College of  
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## RABBITS

### Researchers Note Rabbit Production, Market Advances

Processors already are making rabbit sausages, and if the poultry industry can make chicken and turkey frankfurters, why can't the rabbit industry make rabbit franks!

That's a question researchers Peter Cheeke and Nephi Patton have raised. Cheeke and Patton are directors of Oregon State University's three-year-old OSU Rabbit Research Center, and they suggested in an OSU Progress report that rabbits are destined to be "a major livestock species" in the U.S. They said there is no reason why the processing and marketing technology that has brought chicken and turkey franks to consumers cannot bring them similar rabbit products.

Certain production and marketing problems peculiar to rabbitry must be first overcome, Cheeke and Patton noted. Work at the rabbit research center already has helped the industry hop major obstacles, they added.

#### Production factors

The rabbit research center has developed a high-fiber, grainless feed which helps overcome diarrhea problems associated with enteritis, and the center is ready to release a hybrid breeding stock that is resistant to "snuffles," Cheeke and Patton said. Enteritis and snuffles, a respiratory disease similar to pneumonia, kill 20-25% of commercially raised rabbits every year, they explained.

Basically, they said, diarrhea occurs when rabbits are unable to properly digest grains in their rations. Most commercial feed pellets for rabbits contain grain, they added, but research center work has shown that does produce bigger litters and rabbits have less mortality on the research center's non-grain feed.

Cheeke and Patton said there is another benefit to the non-grain ration in that rabbits are "little protein factories," capable of extracting necessary protein and other nutrients from forages more efficiently than cattle and other livestock. As competition for feed grains increases and as prices rise, the rabbit's ability to thrive on forage and wastes, such as milling byproducts, will be important, they explained.

They said their snuffles-resistant rabbit also offers other benefits, including bigger litters and faster growth.

Another problem the two rabbit workers noted is that commercial production requires more than a one-person work force but doesn't return well enough yet to justify hired workers. Consequently, most rabbit producers are in a "no man's land" right now, handling 50-150-doe herds, which are not large enough to make money from, Cheeke and Patton said.

"Commercial rabbit raising best fits a family operation," they said.

Rabbit raising also fits well into backyard farming in the country or city, Cheeke and Patton said, and shows promise in developing nations because rabbits can be live-stored on the hoof rather than needing elaborate, expensive refrigeration.

### Marketing factors

As for marketing, the rabbit industry must overcome the "Easter bunny syndrome," Cheeke and Patton said.

They said they believe that can be dealt with as more rabbit meat is merchandised through groceries, restaurants and in other ways. The resistance to eating rabbit meat, for example, is also because consumers "don't buy weird meats" for themselves or their families, they said. Exposing consumers, especially young people to rabbit meat through military and school feeding programs would introduce new generations to rabbit, they said. "A lot of young people are use to trying things their parents wouldn't" they noted.

Cheeke and Patton have also started a campaign to label rabbit meat as "cunie," which is a shortened version of the Latin word for rabbit. Patton noted that beef is used instead of "cow" and that pork is used instead of "pig." Why call rabbit rabbit?"

The bunny syndrome bias is not logical anyway, the two added. Lambs are cute, like rabbits, but are raised as a food animal, they noted; in China, people eat cats and dogs. "Imagine how Americans would react to that," Patton said. "It's a cultural thing. It's what you're use to."--Feedstuffs; June 28, 1982.

### CAST REPORT: MORE SHEEP, GOATS WOULD BALANCE U.S. RANGELAND USE

By raising more sheep and goats, the U.S. could improve its rangeland and use more crop residues for feeding, according to a report by the Council for Agricultural Science & Technology (CAST).

The report on the U.S. sheep and goat industry was compiled by a task force chaired by Carl S. Menzies, resident director, Texas A&M University Agricultural Research & Extension Center, San Angelo.

"Most sheep and goats are produced on rangeland pasture, which comprise 44% of the total U.S. land area," said Menzies. "Our agricultural resources on much of the range and pasture land are being used inefficiently because we graze only cattle instead of a properly balanced mixture of sheep, goats, and cattle.

"Sheep and goats graze over wider areas and will graze rougher terrain than will cattle, and they prefer different kinds of vegetation."

Cattle tend to select grass, sheep prefer low-growing nongrassy plants, and goats eat brush. A major problem on much of the U.S. rangeland is encroachment of weeds and brush as a result of continued selection of grass by grazing too many cattle and too few sheep and goats, according to the report.

In addition to improving the value of U.S. rangeland, sheep and goats can make better use of crop residues that currently go to waste, the task force said.

Sheep production declined in the years following World War II as synthetic fibers captured more of the wool market. Since 1979, however, sheep numbers have been increasing because of fuel costs involved in producing synthetic fibers and raising cattle.

"The sheep and goat industry still has many problems," said Menzies. These include predators (especially coyotes); losses associated with poisonous plants, infectious diseases, parasites and nutritional deficiencies; difficulties in obtaining "suitable" labor, and problems in marketing.

"So little lamb is eaten now that many people don't have a 'taste' for lamb as they do for beef. Another problem is the relatively small size of the industry in comparison with the cattle, hog, and poultry industries; this leads, for example, to such discrimination as codes in some states specifying that "Milk comes only from cows," said Menzies.

A major concern related to its relatively small size is the limited market the sheep and goat industry provides for new technologies, including drugs and biologics, according to the report. The high costs of developing new products and of obtaining regulatory approval for their use encourage manufactures to concentrate their efforts on the large markets provided by cattle, swine and poultry.

The report is available for \$3 from CAST, 250 Memorial Union, Ames, Iowa 50011.

#### MEETINGS

The following upcoming meetings may be of interest to veterinarians. If you need further information and programs, please contact Dr. Kent C. Roberts at 961-6057.

September 30 - October 1, 1982	Bovine Practitioners Seminar "Reproductive Management" Frederick, Maryland
October 22, 1982	Equine Practitioners Seminar "The Veterinarian as Equine Consultant" Charlottesville, VA
October 29 - October 31, 1982	"Advanced Orthopedic Lecture/Web Lab" VA-MD Regional College of Veterinary Medicine Virginia Tech Blacksburg, VA

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