SECTION I. USER INSTRUCTIONS

A. INTRODUCTION AND THEORY

The Livestock Protection Collar (LP Collar), invented by Roy McBride of Alpine, Texas, exploits the coyote's habit of killing sheep and goats by bites to the throat (photo 1). As described in McBride's U.S. Patent No. 3,842,806 (issued in 1974), coyotes that attack collared livestock usually bite through the collars and receive oral doses of the contents. When used with a toxicant such as sodium fluoroacetate (Compound 1080), LP Collars kill the attacking coyotes. Collars may be used only by specifically certified LP Collar applicators or persons under their direct supervision (see Section II. 2). This Technical Bulletin is part of the EPA-approved labeling and contains detailed instructions for safe and effective use of LP Collars.

Coyotes' attacking and feeding behaviors do not seem to be affected by the presence of LP Collars. Attacking coyotes usually kill and feed upon collared animals just as they would if no collar were present. After a lethal dose of sodium fluoroacetate (Compound 1080) has been ingested, symptoms of intoxication typically do not appear for 2 or more hours. Death occurs from 2 to 7 hours (average 4 hours, 20 minutes) after the collar is punctured.

When LP Collars are used properly, coyotes may puncture them in 75 percent or more of their attacks. A 100 percent puncture rate is unlikely to be achieved because coyotes sometimes attack body sites other than the throat (photo 2). Effective use of LP Collars requires not only that collars be positioned correctly, but also that coyote attacks be directed or targeted to collared livestock. Targeting may be difficult or impossible under some conditions. If coyotes are killing less than once per week, the collar technique may be impractical. Collars are recommended for ranches with high rates of coyote predation and management conditions that permit effective targeting of predations to collared livestock.

Experienced persons usually can evaluate local conditions quickly to decide whether or not LP collars will be effective. In addition to the basic problem of targeting, other factors to consider in deciding whether or not to use collars include availability and effectiveness of other control methods; costs of collars; labor requirements to collar and monitor livestock; potential hazards of collars to humans, domestic animals including pets, and nontarget wildlife; and severity of predation.

B. TOXIC PROPERTIES OF SODIUM FLUOROACETATE (COMPOUND 1080)

Compound 1080 is highly toxic to warm-blooded animals, including man, when taken internally. Humans are not likely to be poisoned except by ingestion of LP collar contents. Based on available estimates of toxicity (0.7-2.1 mg/kg), one LP collar contains approximately 2 to 6 lethal doses for a 150-pound man. Before using collars, read the label (Appendix A) and the Use Restrictions in this Technical Bulletin (Section II) carefully.

The toxic solution in LP collars contains yellow dye (tartrazine) as a safety marker. Punctured, damaged, or broken collars together with clothing, animal remains, vegetation, soil, or other materials marked by this dye must be cleaned or disposed of in accordance with the label and Sections II.D.5 and II. 12 of this Technical Bulletin. Collars with minor damage to straps or fastenings may be repaired by applicators as long as the toxicant reservoirs have not been punctured and do not leak.

Compound 1080 is hazardous to domestic animals including livestock and pets. Dogs are particularly susceptible. In field studies, dogs have died after they attacked collared livestock and punctured the collars. As little as 0.1 ml of a LP collar's contents may be fatal to a 25-pound dog. Dogs could be poisoned by scavenging the carcasses of collared livestock. Therefore, to minimize the potential hazard to dogs, promptly dispose of all livestock carcasses as well as coyote carcasses suspected of being poisoned by Compound 1080 according to instructions in this bulletin.

Pen studies have shown that an adult sheep can be fatally poisoned by eating forage containing as little as 1 ml of 1080 solution from LP Collars. Although no livestock appeared to have been poisoned by eating contaminated vegetation during 5 years of field testing, it could happen. Therefore, contaminated forage must be disposed of as directed on the product labeling.

C. DESCRIPTION OF LP COLLARS

The LP Collar is a rubber bladder that contains a solution of Compound 1080, with neck straps for attachment to a sheep or goat. The type of collar used most up to 1985 has two Velcro® neck straps (0.75 inches wide and 22-25 inches long on new collars). Three-strap models also are available and are intended for use on goats. Each collar has two toxicant reservoirs that contain 150 mg (0.15 grams) of sodium fluoroacetate (active ingredient). Each collar contains a total of 300 mg (0.3 grams) of sodium fluoroacetate (active ingredient).

LP Collars of two sizes are available (photo 3). The small collar is intended for lambs and kids weighing from 25 to 50 pounds; the larger for sheep and goats weighing more than 50 pounds. LP collars are not recommended for small animals (under 25 lbs). A small collar, properly in place on a lamb, is shown in photo 4.

D. MANAGEMENT OF LP COLLARS ON SHEEP AND GOATS

1. Things to do before putting LP collars on livestock:

   a. Be sure you have enough LP collars (see Section E).

   b. Inspect all LP collars for leaks and inspect straps to be sure they are securely attached. Do not use leaking or torn collars (photo 7) or collars on which the straps are coming loose (photo 8). Loose straps may be reattached by sewing.

   c. Check the fence around the pasture where collared animals are to be placed and repair as necessary to keep animals within the pasture.

d. Establish locations for warning signs (Appendix B), and be sure you have enough signs (see use restriction 10).

e. Inform neighbors of your intent to use LP collars and advise them of the potential hazards to free-roaming dogs.

f. If ear tags or other marks are to be used, have the tags and related equipment on hand.

g. Have an emetic (1-ounce bottle of syrup of ipecac) available when LP collars are to be handled. Also have a few good quality plastic bags or other leakproof containers on hand for packaging damaged collars.

h. Select and pen the target flock (animals to be collared).

2. Attaching LP collars

a. Hold LP collars up to the necks of target livestock to determine the size of collar needed for each animal (photo 9). The rubber portion of the collar should come up to the ear (photo 4). If the collar is too small, there will be an unprotected region below each ear (photo 10). This will result in a lower puncture rate than would be obtained with collars of proper size.

b. One person can put LP collars on livestock, but the task is much easier for a two-person team. One person holds each animal while the other attaches its collar. To attach a collar, hold it in position under the animal's throat. Tighten the rear strap over the animal's neck just behind the ears and fasten it temporarily. Then tighten the front strap over the head between the eyes and ears and fasten it securely. Straps should be positioned to keep the rubber part of the collar directly below the ear (photos 4, 5, 6). On goats with horns, the front strap may pass in front of both horns or in front of one horn and behind the other. If necessary, use string or twine to tie the front strap to one or both horns to keep the collar in position (photo 11). Once the front strap is in position, readjust the rear strap if necessary and then secure it. If the straps are longer than needed, a knife or scissors can be used to trim off the excess. Fasten the strap ends by stapling (photo 12).

c. LP collar straps must be tight enough to prevent collars from slipping out of position (photo 13), but not so tight as to choke the animal or cause sores (photo 14). Each strap should be loose enough that the applicator can insert 2 fingers between the strap and the animal. Collars stay in place well on animals with wool or mohair, but may be difficult to keep in position on newly shorn or slick-necked animals, particularly goats (photo 11). Head and neck conformation varies among animals and it may be impossible to keep collars in place on some individuals. They should be taken out of the collared flock.

d. A suitable method of permanently identifying individual animals in a target flock is required to keep track of LP collared livestock. One such method is the use of numbered ear tags. Tags that can be read from a distance of 50 feet or more are most useful (photo 15). If you are using ear tags, attach them before the animal is collared.

e. When the LP collar is in place, release the animal into a corral or other confined area and observe it carefully. Listen for labored breathing that may indicate the collar is too tight. When first released, collared sheep and goats often shake their heads, rub or make other attempts to rid themselves of the collars. This behavior will stop within a few hours if collars are not too tight. After you are satisfied that the collars are properly attached, move collared animals to the desired location.

f. Place warning signs at logical points of access (see Section II. 10 and Appendix B).

g. After handling LP collars, wash your hands with soap and water.

3. Monitoring LP collared livestock

a. Once LP collared animals are in the desired location, the pasture should be checked every 7 days or more often if frequent predation is expected. During each check try to locate each animal and observe collars to be sure they are in position. If the collar has slipped out of position, catch the animal and reposition its collar. Inspect each animal's neck for yellow dye, which could indicate a punctured or leaking collar. If dye is seen, catch the animal and check the collar. Replace any damaged or leaking collar. See the label and Section I. D. 5 and VI. 13 of this Technical Bulletin. Collars on small kids or lambs may require periodic adjustment to allow for growth.

b. When searching for LP collared livestock, watch for both animal carcasses and congregations of scavenging birds that could indicate the locations of carcasses. Whenever you visit a pasture, record the identity of each collared animal seen. Check each warning sign weekly to ensure that it is in place and is legible.

Based on experience gained in research studies, you will not see each LP collared animal every time you visit large, brushy pastures. Any animal not accounted for in two consecutive checks may be dead. An intensive search for it must be made. In addition, if more than three collared animals are not accounted for during any one check, an intensive search for these animals is required. Pastures must be systematically searched in their entirety or until the missing animals are located.

c. If more than nine (9) LP collars and/or collared animals are unaccounted for during any 60 day period, remove all collars from animals and terminate their use. Seek technical advice if necessary to determine and correct the cause(s) of collar loss. Collar use may be resumed after adequate steps have been taken to prevent further, excessive loss of collars. See Section II. 11.

d. Routine checks of LP collared livestock are difficult if the animals are secretive or wild. Feed concentrates can be used to train animals to come to you or your vehicle. This facilitates the identification and inspection of collared livestock (photo 16). It also helps to have a few tame animals in the collared flock. Binoculars may be useful for inspecting collared livestock from a distance.

e. Infrequently, LP collars may be missing from carcasses of sheep or goats killed by coyotes. In research studies, missing collars appeared to have been carried or dragged away by coyotes. Some were found as far as half a mile away from kill sites, but about half of the missing collars were never recovered. Coyotes sometimes cache (hide or bury) them. Whenever a collar is missing, make a reasonable effort to find it. See Section II. 11.

f. If you see an animal that you think may have been poisoned, report it promptly to the appropriate regulatory agency. Any suspected poisoning of threatened or endangered species must be reported immediately. See Section II. 6.