

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

JUN 26 1992

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Mr. Roger Scheibe
South Dakota Department of Agriculture
Division of Regulatory Services
Anderson Building, 445 East Capitol
Pierre, SD 57501-3188

Dear Mr. Scheibe:

Subject: Sodium Fluoroacetate (Compound 1080) Livestock
Protection Collar
EPA Registration No. 13808-7
Your CSF Dated June 11, 1992

The Confidential Statement of Formula (CSF) dated June 11,
1992, is acceptable and supersedes all previous CSFs for this
product.

Sincerely yours,

Robert A. Forrest
Product Manager (14)
Insecticide-Rodenticide Branch
Registration Division (H7505C)

6/26/92:ERICKSON:DISK7:13808-7.CS2

CONCURRENCES							
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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

JUN 16 1992

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Mr. Roger Scheibe
South Dakota Dept. of Agriculture
Division of Regulatory Services
Anderson Building, 445 East Capitol
Pierre, SD 57501-3188

Dear Mr. Scheibe:

Subject: Sodium Fluoroacetate (Compound 1080) Livestock
Protection Collar
EPA Registration No. 13808-7
Your FAX Dated June 16, 1992

The amendment referred to above, submitted in connection with registration under FIFRA sec. 3(c)(7)(A), is acceptable, subject to the following provisions:

1. Submit and/or cite all data required for registration/reregistration of your product under FIFRA sec. 3(c)(5) when the Agency requires all registrants of similar products to submit such data.
2. Submit one copy of your final printed labeling before you release the product for shipment.

This registration will be subject to cancellation in accordance with FIFRA sec. 6(e) if you do not comply with these conditions. Your release for shipment of the product bearing the amended labeling constitutes acceptance of these conditions.

A stamped copy of the labeling is enclosed for your records.

Sincerely yours,

Robert A. Forrest
Product Manager (14)
Insecticide-Rodenticide Branch
Registration Division (H7505C)

6/16/92:ERICKSON:DISK7:13808-7.CSF

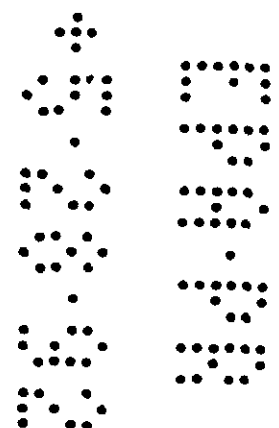
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TECHNICAL BULLETIN

FOR APPLICATOR USE OF THE

LIVESTOCK PROTECTION COLLAR

ACCEPTED
JUN 16 1992
Under the Federal Insecticide,
Fungicide, and Rodenticide Act,
as amended, for the pesticide
registered under
EPA Reg. No. 13808-7



SOUTH DAKOTA DEPARTMENT OF AGRICULTURE

REGULATORY SERVICES DIVISION

PIERRE, SOUTH DAKOTA 57501

RESTRICTED USE PESTICIDE

Collars shall be sold or transferred only by registrants or their agents and only to certified Livestock Protection Collar applicators. Collars may be used only by specifically certified livestock Protection Collar applicators or by persons under their direct supervision.

**FOR USE ONLY IN THE STATE OF SOUTH DAKOTA:
SODIUM FLUOROACETATE (COMPOUND 1080)
LIVESTOCK PROTECTION COLLAR**

For use on sheep or goats to kill depredating coyotes

ACTIVE INGREDIENT - SODIUM FLUOROACETATE 1.00%
INERT INGREDIENTS* 99.00%
TOTAL 100.00%

KEEP OUT OF REACH OF CHILDREN

DANGER



POISON

STATEMENT OF PRACTICAL TREATMENT

IF SWALLOWED: Induce vomiting at once with an emetic such as syrup of ipecac; use as directed. If emetic is not available, drink 1-2 glasses of water and induce vomiting by touching back of throat with finger. Do not induce vomiting or giving anything by mouth to an unconscious person. **PROMPT TREATMENT IS MANDATORY. GET MEDICAL ATTENTION IMMEDIATELY.**

IF ON SKIN: Wash the exposed area twice with soap and water.

IF ON EYES: Flush eyes with plenty of water for at least 15 minutes.

IF ON CLOTHING: Remove contaminated clothing and wash before reuse. Dispose of all contaminated leather, including shoes, boots, and gloves, according to the "Pesticide Disposal" section. See disposal instructions on the side panel.

SEE SIDE PANEL FOR ADDITIONAL PRECAUTIONARY STATEMENTS.

MANUFACTURED FOR: South Dakota Department of Agriculture, Pierre, SD 57501

U.S. PAT. 3,342,806 EPA ESTABLISHMENT NO: 13808-SD-1
EPA REGISTRATION NO: 13808-7

NET CONTENTS: 30.4 grams (1.1 oz.) per small collar

NOTICE

Seller makes no warranty, expressed or implied, concerning the use of this product other than indicated on the label. Buyer assumes all risks of use and/or handling of this product when such use and/or handling is contrary to label instructions.

**PRECAUTIONARY
HARDS TO HUMANS AND
DANGERS**

May be fatal if swallowed. Wash hands after handling collars. Wash hands after handling collars that have been contaminated with contaminated animals for food or

ENVIRONMENT.

This product is highly toxic to feeding on carcasses of contaminated animals. Apply this product only as specified on any body of water.

ENDANGERED SPECIES

NOTICE: It is a Federal offense in any manner that results in the death of an endangered species.

The use of 1080 in the Livestock Protection Collar is determined to pose a hazard to certain species. See technical bulletin (restricted use) where the 1080 collar cannot be used from the U.S. Fish and Wildlife Service.

INFORMATION FOR

WARNING SYMPTOMS: 1080 causes transformation of fluoroacetate to cyanide in mitochondria. Poisoning is not followed by a symptom-free latent period of 1/2 hour. **ingestion and onset of symptoms:** hyperactive behavior leading to cyanosis. Ventricular fibrillation is the primary cause of death. Early symptoms include heart sounds and premature, weak

TREATMENT: No effective symptomatic treatment may be expected. Create artificial airway if necessary. Administer 100-200 ml volume. Initiate emesis. If patient is unconscious, has lost the gag reflex, endotracheal intubation precede gastric lavage with 100-200 ml activated charcoal and magnesium sulfate. IV Diazepam. Monitor cardiac function. Glycerol monacetate (monoacetate) is experimental and unapproved. **NEAREST POISON CONTROL CENTER:** INFORMATION. Symptoms of poisoning usually subside within 12-24 hours. **CAUTION:** The use of parenteral solutions. Technical grade material containing 1080, in dosages, may cause hemolysis, hypotension, paralysis. If a nonsterile solution is used, it should be cultured to guide the treatment if sepsis develops. (USEPA, RECOGNITION AND MANAGEMENT OF POISONINGS 3rd ED.)

ACCEPTED
JUN 16 1992
Under the Federal Insecticide, Fungicide, and Rodenticide Act, as amended, for the pesticide registered under EPA Reg. No. 13808-7

BEST AVAILABLE COPY

BEST AVAILABLE COPY

DIRECTIONS FOR USE

It is a violation of State and Federal laws to use this product in a manner inconsistent with its labeling or the Compound 1080 cancellation order. Misuse may result in civil or criminal enforcement action.

DO NOT REMOVE TOXICANT FROM COLLARS. DO NOT USE TORN, DAMAGED OR LEAKING COLLARS. Dispose of damaged collars in accordance with the "Storage and Disposal" instructions on this label.

Put collars on the necks of sheep or goats in fenced pastures where coyote predation is occurring or is expected to occur. Use collars only in accordance with the User Instructions and Use Restrictions contained in the accompanying Technical Bulletin.

STORAGE AND DISPOSAL

Do not contaminate water, food or feed by storage or disposal.

STORAGE: Store Livestock Protection Collars only in original container, in a dry, locked place away from food, feed, domestic animals and corrosive chemicals. Do not store in any structure occupied by humans.

PESTICIDE DISPOSAL: Pesticide wastes are acutely hazardous. Improper disposal of such materials is a violation of Federal Law.

Dispose of Wastes contaminated by 1080 (carcasses, wool hair, vegetation, soil, leather clothing, and water) under three feet of soil at a safe location, preferably on property owned or managed by the applicator and at least one half mile from human habitations and water supplies.

When snow or frozen ground make on-site disposal impractical, up to one cubic foot of wastes may be stored in a leakproof container, in a dry locked, place for up to 90 days.

Alternatively, contact your state pesticide Environmental Control Agency or the Hazardous Waste representative at the nearest EPA Regional Office for guidance in disposing of wastes at approved hazardous waste disposal facilities.

COLLAR DISPOSAL: Damaged irreparable and/or leaking collars must be disposed of by deep burial. Follow the procedures described above and in Use Restriction the Technical Bulletin.

CONTAINER DISPOSAL: Metal and plastic container - Triple rinse contaminated and uncontaminated containers with water. Then puncture and dispose of contaminated containers and rinse as above.

RESTRICTED USE PESTICIDE

Collars shall be sold or transferred only by registrants or their agents and only to certified Livestock Protection Collar applicators. Collars may be used only by specifically certified livestock Protection Collar applicators or by persons under their direct supervision.

**FOR USE ONLY IN THE STATE OF SOUTH DAKOTA:
SODIUM FLUOROACETATE (COMPOUND 1080)
LIVESTOCK PROTECTION COLLAR**

For use on sheep or goats to kill depredating coyotes

ACTIVE INGREDIENT - SODIUM FLUOROACETATE	1.00%
INERT INGREDIENTS*	99.00%
TOTAL	100.00%

KEEP OUT OF REACH OF CHILDREN

DANGER



POISON

STATEMENT OF PRACTICAL TREATMENT

IF SWALLOWED: Induce vomiting at once with an emetic such as syrup of ipecac; use as directed. If emetic is not available, drink 1-2 glasses of water and induce vomiting by touching back of throat with finger. Do not induce vomiting or giving anything by mouth to an unconscious person. **PROMPT TREATMENT IS MANDATORY. GET MEDICAL ATTENTION IMMEDIATELY.**

IF ON SKIN: Wash the exposed area twice with soap and water.

IF ON EYES: Flush eyes with plenty of water for at least 15 minutes.

IF ON CLOTHING: Remove contaminated clothing and wash before reuse. Dispose of all contaminated leather, including shoes, boots, and gloves, according to the "Pesticide Disposal" section. See disposal instructions on the side panel.

SEE SIDE PANEL FOR ADDITIONAL PRECAUTIONARY STATEMENTS.

MANUFACTURED FOR: South Dakota Department of Agriculture, Pierre, SD 57501

U.S. PAT. 3,842,806 EPA ESTABLISHMENT NO: 13808-SD-1
EPA REGISTRATION NO: 13808-7

NET CONTENTS: 30.4 grams (1.1 oz.) per small collar

NOTICE

Seller makes no warranty, expressed or implied, concerning the use of this product other than indicated on the label. Buyer assumes all risks of use and/or handling of this product when such use and/or handling is contrary to label instructions.

ACCEPTED
JUN 16 1992
Under the Federal Insecticide, Fungicide, and Rodenticide Act, as amended, for the pesticide registered under EPA Reg. No. 13808-7

**PRECAUTIONS
HARMS TO HUMANS**

May be fatal if swallowed handling collars. Wash hands that have been contaminated animals from

ENVIRONMENTAL
This product is highly toxic if feeding on carcasses of other animals. Apply this product only to any body of water.

ENDANGERED SPECIES
NOTICE: It is a Federal action that results in the endangerment of species.

The use of 1080 in the State of South Dakota is determined to pose a hazard to humans. See technical bulletin (1080) where the 1080 collar can be obtained from the U.S. Fish and Wildlife Service.

INFORMATION
WARNING SYMPTOMS: The transformation of fluorinated mitochondria. Poisoning symptoms-free latent period, ingestion and onset of symptoms and hyperactive behavior (cyanosis) Ventricular fibrillation primary cause of death. heart sounds and premonitory

TREATMENT: No effective symptomatic treatment. Create artificial airway if necessary. Initiate emesis. If emesis has lost the gag reflex precede gastric lavage with activated charcoal and 50 mg IV Diazepam. Monitor cardiac glyceryl monoacetate (magnesium) it is experimental and **NEAREST POISON CENTER INFORMATION.** Symptoms usually subside within 1 hour. **CAUTION:** The use of Technical grade material dosages, may cause hemiparesis. If a nonsterile should be cultured to grow if sepsis develops. (USEPA, RECOGNITION POISONINGS 3rd ED.)

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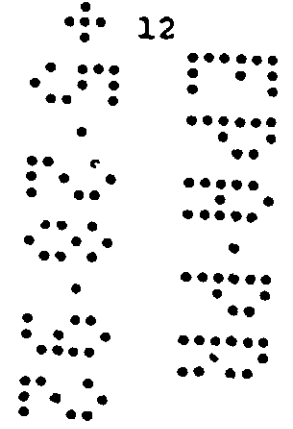
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DO'S AND DON'TS FOR LIVESTOCK PROTECTION COLLARS

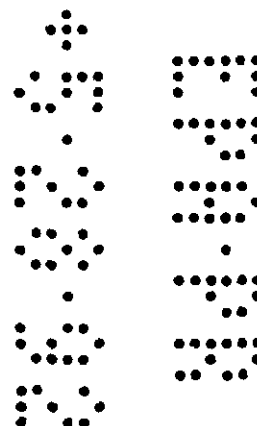
DO

- read the label and Technical Bulletin before using collars
- plan how to target coyotes to your collared animals before using collars
- use appropriate size collars (small collars for 25 to 50 lb. animals; large collars* for larger animals)
- be sure to position collars correctly (see pages 6 and 7)
- check and repair fences if necessary before putting collared animals in pasture
- notify neighbors that collars, can be hazardous to free-ranging pets
- keep warning signs in place as long as collars are being used (see page 13)
- check collared animals weekly or more often to be sure that all are present and that collars are in position and not punctured (see pages 7, 13)
- properly dispose of all collars, animals, vegetation, soil, water, leather, clothing, and containers contaminated by 1080 (see pages 8, 9, 14)
- report any suspected poisoning of nontarget animals or humans (see pages 8, 13)
- minimize human activity in pastures where collars are being used
- keep records up to date as directed in the labeling (see page 12)
- take collars off when predation has stopped or is not expected to occur
- store collars properly when not in use (see page 14)
- wear water-proof gloves when handling collars
- wash your hands with soap and water after handling collars

*The large (60 ml) collar was not approved in the original registration of July 1985, but may become available later.

DON'T

- waste time by placing collared animals where coyotes won't attack them
- use collars if your livestock can be protected more easily or economically by other measures
- use so few collared animals that coyotes won't find them
- use more than 20 collars in any 100-acre or smaller pasture, or more than 50 collars per section (640 acres) of pasture (see pages 14 - 15)
- use collars on unfenced, open range (see page 13)
- use collars where their use is prohibited to protect endangered wildlife (see page 14)
- use contaminated animals for food or feed (see page 15)
- use leaking or damaged collars
- remove toxicant from collars



Section 1. USER INSTRUCTIONS

A. INTRODUCTION AND THEORY

The Livestock Protection 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), Livestock Protection Collars kill the attacking coyotes. Collars may be used only by specifically certified Livestock Protection Collar applicators (see Section II. 2). This publication is intended for the instruction of collar applicators.

Coyotes' attacking and feeding behaviors do not seem to be affected by the presence of Livestock Protection 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 hr 20 min) after the collar is punctured.

When 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 Livestock Protection 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 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 indigestion of collar contents. Based on available estimates of toxicity (0.7-2.1 mg/kg) a lethal dose for a 150-pound man would be contained in 5 to 14 ml of collar solution.

One large collar (contents 60 ml) contains 4 to 12 lethal doses, and a small collar (contents 30 ml) contains 2 to 6 lethal doses. Before using collars, read the label (Appendix A) and the Use Restrictions in this Technical Bulletin (Section II) carefully.

The toxic solution in Livestock Protection 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 Section I. D. 5 and II. 13 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 collar 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 Livestock Protection 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 COLLARS

The Livestock Protection 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 1990 has two Velcro neck straps (0.75 inches wide and 22-24 inches long on new collars). Three-strap models also are available and are intended for use on goats. Both two- and three-strap collars have two toxicant reservoirs and come in two sizes-- small and large (photo 3). The small collar is intended for use on lambs and kids weighing from 25 to 50 pounds. Livestock protection collars are not recommended for small animals (under 25 lbs). A small collar is used on large lambs and kids, and on adult sheep and goats. A goat with a large collar is shown in photo 5.

D. MANAGEMENT OF COLLARS ON SHEEP AND GOATS

1. Things to do before putting collars on livestock:
 - a. Be sure you have enough collars of proper size
 - b. Inspect all 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 (page 13), and be sure you have enough signs.
- e. Inform neighbors of your intent to use Livestock Protection 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 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 collars

Hold 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.

One person can put 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).

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.

A suitable method of permanently identifying individual animals in a target flock is required to keep track of 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.

When the 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.

Place warning signs at logical points of access (see Section II. 10).

After handling Livestock Protection Collars, wash your hands with soap and water.

3. Monitoring collared livestock.

Once 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 would 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 II. 13 of this Technical Bulletin. Collars on

small kids or lambs may require periodic adjustment to allow for growth.

When searching for collared livestock, watch for both animal carcasses and congregation 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 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.

If more than nine (9) 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.

Routine checks of 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.

Infrequently, 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 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.

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.

4. Handling collars and contaminated animal remains, vegetation, clothing, water and soil.

The toxic solution in Livestock Protection Collars contains a yellow dye, Tartrazine, which is used as a marker for the presence of 1080 on punctured, damaged or broken collars; on clothing, animal remains, vegetation, soil, or other materials; and in water. Always use waterproof gloves when handling collars or any materials known to be contaminated by 1080.

Inspect carcasses of collared animals to determine the cause of death. When the carcasses are fresh (within 24 hours after death), coyote kills usually are obvious (photo 17). Remove punctured collars carefully and examine the punctures. Holes made by coyote teeth usually can be distinguished from accidental punctures. When collars are punctured by cactus thorns, the thorns sometimes remain in the holes (photo 18).

If the collar was punctured, remove it carefully to minimize leakage and place in a leakproof plastic bag or other container for transport to your disposal site. If necessary, doublebag to prevent leakage. Examine the carcass for contamination as indicated by yellow dye. Cut away the contaminated parts for disposal along with the punctured collar. See Section II. 12-13. Dispose the remainder of the carcass using your normal practice. Cut or dig up contaminated forage and soil and place them in a leakproof container for transport to the disposal site.

If the collar was not punctured, the applicator can reuse it on another animal. Dispose of carcass using your normal practice. No special handling is required. If an unpunctured collar has only minor damage to straps or fasteners, the applicator may repair it.

When predation has stopped, or when collars are to be taken off for other reasons such as shearing, gather the collared flock into a corral. Hold each animal and inspect its collar for punctures. Loosen the neck straps and pull them free. Do not pull so hard that you rupture the collar (photo 7). It may be necessary, particularly with Angora goats, to use a knife or scissors to free collar straps from the animals' hair. Clean unpunctured collars as necessary and return them to locked storage until you need them again.

If clothing becomes contaminated with 1080 solution, remove it promptly. Wash clothes before wearing them again. Contaminated leather clothing, including gloves and footwear, should be disposed of in the same manner as contaminated animal remains because pesticides cannot be easily cleaned from leather. See Section II. 13.

5. Disposal of damaged collars and other contaminated materials

Damaged, punctured, or leaking collars, contaminated animal remains, vegetation, soil, water and leather clothing must be properly disposed of. The preferred method is by deep burial under 3 feet of soil in a safe field location at least one-half mile from human habitations and water supplies. For disposal on the ranch, it may be convenient to drill several deep holes using a mechanized post hole auger, or to make a trench with a backhoe. Then, as waste materials are produced, they can be dropped into the hole or trench and covered with earth. Not more than 10 collars may be buried in any one hole. If buried in a trench, each group of ten collars must be at least 10 feet apart.

Alternatively, contact the South Dakota Department of Agriculture, Pierre, South Dakota or the South Dakota Department of Water and Natural Resources, Pierre, South Dakota for guidance in disposing of wastes at approved hazardous waste disposal facilities.

When snow or frozen ground make on site disposal impractical, up to one cubic foot of wastes may be stored in a leakproof container, in a dry, locked place for up to 90 days.

E. Directing Coyote Predation to Collared Livestock

1. General Comments

The process of directing coyote predation to collared livestock is called targeting. Knowledge of targeting is in its infancy and should improve as more people gain experience with Livestock Protection Collars. Three different approaches or targeting strategies are described here. Ranchers and predation control specialists are encouraged to apply these methods as necessary to achieve the best results in their own circumstances.

2. Targeting Strategies

a. Collar all vulnerable livestock

Collaring all sheep or goats on a ranch would solve the targeting problem. This strategy has not been tested due to the cost of collars (\$20.00 each in 1990) and the large number that would be required in large flocks (over 100 animals). Nevertheless, in small flocks (50 or fewer animals) it may be practical to collar all the lambs or kids. In flocks with 50 to 100 lambs or kids, it may be worthwhile to collar the smallest 20 to 50 individuals. Do not use more than 20 collars in any pasture under 100 acres, or more than 50 collars per square mile of fenced pasture.

b. Use target (collared) flocks

When coyotes are killing in particular pastures, remove all vulnerable livestock. Place 20 to 50 collared lambs or kids with their mothers in the pasture while all other vulnerable animals are penned at night or moved elsewhere. Add uncollared adult sheep or goats to the target flock to increase its total size to 50 or 100 head. If coyotes have been killing adult sheep or goats in the area, both adults and kids in the target flock should be collared. Remove collars 30 days after predation ceases, or whenever the risk of predation has abated.

This was the strategy used in most field tests and is the usual approach when collars are introduced onto a ranch where depredation is in progress. This strategy also can be employed by placing collared flocks in vacant pastures 1 to 2 months before large bands of sheep or goats arrive.

c. Collar vulnerable individuals in large flocks

Coyotes usually prefer kids or lambs to adult goats or sheep. Experience with Angora goats has shown that if a few collared kids are placed in wether flocks (5-10 collared kids per 100 uncollared adult.), coyotes will select the kids (about 20).

This strategy has not been tested on sheep and is not recommended for sheep at this time.

3. Mistakes in Targeting

As with any new technique, one must learn how to use Livestock Protection Collars before optimum results can be expected. Following is a list of some mistakes commonly made by persons learning this technique:

- a. Collars may be placed where effective targeting cannot be expected. In one example, 20 lambs were collared in a ewe-lamb flock containing hundreds of lambs. Coyotes subsequently killed the uncollared lambs. Effective targeting did not occur because collared lambs were far outnumbered by uncollared lambs that were equally attractive to coyotes.
- b. Collars are placed where predation is too infrequent. In one such case, collared sheep were exposed for four weeks during which no predation occurred. Users then lost interest and removed the collars. There was no further predation on this ranch for several months. Collars cannot be

used effectively where there is little or no predation.

- c. Target flocks are too small. In one example, six collared lambs were left alone in a one-section pasture. Coyotes passed through the pasture without finding the collared animals and then killed sheep from a large flock in an adjacent pasture. The larger the flock, the more likely it is to attract coyotes. The optimum size for target flocks has not been determined, but pastures of 100 acres or more should probably contain at least 50 head.
- d. Target flocks are not isolated sufficiently from uncollared livestock. On one small farm, a group of ewes and collared lambs was exposed while other sheep on the place were penned each night. Instead of killing the collared flock, coyotes switched to a neighbor's unprotected flock half a mile away. With small farm flocks, adjacent land owners may have to work together to achieve effective targeting.
- e. Small collars are used on large sheep or goats, leaving the throat region inadequately covered (photo 10). Coyotes frequently kill these animals without puncturing the collars.
- f. Collars are attached improperly, or they slip out of position (photo 13). Coyotes will kill these animals but are unlikely to puncture the collars. Collars in proper position are shown in photos 4, 5, 6, 11 and 16.
- g. Collars are placed on sick or cull animals in an effort to avoid sacrificing more valuable livestock. This may be false economy, as coyotes may not attack ill or lethargic animals. Collars should be used only on animals of the size and kind that coyotes have been killing locally.
- h. Use of collars may be accompanied by increased human activity on the ranch. Coyotes often are wary of unusual activity and may temporarily stop killing because of it. Collars should be placed and monitored with a minimum of disruptive activity.

Section II. USE RESTRICTIONS

1. Use of collars shall conform to all applicable Federal, State, and local regulations.

2. Collars shall be sold or transferred only by registrants or their agents and only to certified Livestock Protection Collar applicators. Collars may be used only by specifically certified Livestock Protection Collar applicators.

The certified applicator is directly responsible for assuring that all use restrictions are met. The certified applicator will decide, in accordance with label directions, when and under what circumstances collars will be used.

3. Certification of applicators shall be performed by appropriate regulatory agencies. Prior to certification, each applicator shall receive training which will include, but need not be limited to:

- (a) Training in safe handling and attachment of collars.
- (b) Training in disposal of punctured or leaking collars, and contaminated animal remains, vegetation, soil, and clothing.
- (c) Instructions for practical treatment of 1080 poisoning in human and domestic animals.
- (d) Instructions on record keeping.

4. Registrants or their agents shall keep records of all collars sold or transferred at their address of record. Records shall include the name, address, state where Livestock Protection Collar certification was issued, certification number of each recipient, and dates and number of collars sold or transferred.

5. Each applicator shall keep records dealing with the use of Livestock Protection Collars and the results of such use. Records shall be maintained in accordance with appropriate State or Federal regulations. Such records shall include, but need not be limited to:

- (a) The number of collars attached on livestock.
- (b) The pasture(s) where collared livestock were placed.
- (c) The dates of each application.
- (d) The number of collars found ruptured or punctured, and the apparent cause of the damage.
- (e) The number of collars lost or not recovered.
- (f) The species, locations, and dates of all suspected poisonings of humans, domestic animals or non-target wild animals resulting from collar use.

6. Any suspected poisoning of threatened or endangered species must be reported immediately (within three days) to the South Dakota Department of Agriculture, as well as each suspected poisoning of humans, domestic animals or non-target wild animals.

7. Only the registrant or collar manufacturer is authorized to fill collars with 1080 solution. Certified applicators are not authorized to fill collars. Compound 1080 solution may not be removed from collars and used for any other purpose.
8. Collars shall only be used to take coyotes within fenced pastures ^{1/} no larger than 2,560 acres (4 square mile). But where average annual precipitation does not exceed 20 inches and vegetation is sparse, consisting only of short to mid-height grasses and scattered shrubs, collars may be used in pastures up to a maximum of 10,000 acres (16 square miles) in size.

In no case shall the applicator place collared livestock in pastures where compliance with other Use Restrictions, such as monitoring, is impossible; in fenced pastures larger than 10,000 acres; or in unfenced, open range.

9. Collars shall be used only where losses of sheep or goats due to predation by coyotes are occurring or, based upon prior experience, where coyote predation can reasonably be expected to occur.
10. Where collars are in use, each logical point of access (for example, roads, gates, and trails) shall be conspicuously posted with a bilingual (English/Spanish) warning sign not less than 8"X 10" in size. Signs shall be inspected weekly to ensure their continued presence and legibility and will be removed when collars are removed. The signs will have a minimum type size for "DANGER-POISON" of 24 point (1/4 inches), with remaining text at least 18 point (3/16 inches).

11. All collared livestock must be checked at least once every seven days and collars adjusted if needed.

If any collared animal is not accounted for in two consecutive checks, 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

If more than nine (9) collars are unaccounted for during

^{1/} Fenced pastures include all grazing land that is enclosed by livestock fencing. This includes wire or other man-made fences such as rock walls, and natural barriers such as escarpments, lakes, and large rivers that will prevent escape of livestock.

any 60 day period, remove all collars from animals and terminate their use. Do not resume use until adequate steps have been taken to prevent further, excessive loss of collars.

12. Damaged, punctured, or leaking collars shall be removed from the field for repair or proper disposal. Damaged collars shall be placed individually in leakproof containers while awaiting repair or proper disposal. Authorized collar repairs are limited to minor repairs of straps and fastenings. Leaking or punctured collars must be properly disposed.
13. Dispose of 1080 wastes (punctured, leaking, or otherwise unrepairable collars; contaminated leather clothing, animal remains, wool, hair, vegetation, water, and soil) under three feet of soil, at a safe location, preferably on property owned or managed by the applicator and at least 1/2 mile from human habitations and water supplies. No more than 10 collars may be buried in any one hole. If buried in a trench, each group of 10 collars must be at least 10 feet apart.

Alternatively, contact the South Dakota Department of Agriculture, Pierre, South Dakota, or the South Dakota Department of Water and Natural Resources; Pierre, South Dakota, for guidance in disposing of wastes at approved hazardous disposal facilities.

When snow or frozen ground make on-site disposal impractical, up to one cubic foot of wastes may be stored in a leak-proof container, in a dry, locked place for 90 days.

14. All persons authorized to possess and use Livestock Protection Collars shall store them under lock and key in a dry place away from food, feed, domestic animals, and corrosive chemicals and in outbuildings, or in outdoor storage areas attached to, but separate from human living quarters.
15. Provisions for protection of endangered species:

Do not use the livestock protection collar within one mile of a prairie dog colony where the presence of the black-footed ferret has been confirmed by US Fish & Wildlife Service within the past 5-year period.
16. The number of collars used shall be the minimum necessary for effective livestock protection. For pastures of the following size classes, do not use more collars than the number indicated.

Size (acres)

Number of Collars

Up to 100	20
101 to 640	50
641 to 10,000*	100

*See Section II. 8.

17. Each applicator will have a one-ounce bottle of syrup of ipecac (to induce vomiting in case of accidental poisoning) available when attaching, inspecting, removing, or disposing of collars.
18. No contaminated animal will be used for food or feed.

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DIRECTIONS FOR USE

It is a violation of State and Federal laws to use this product in a manner inconsistent with its labeling or the Compound 1080 cancellation order. Misuse may result in civil or criminal enforcement action.

DO NOT REMOVE TOXICANT FROM COLLARS. DO NOT USE TORN, DAMAGED OR LEAKING COLLARS. Dispose of damaged collars in accordance with the "Storage and Disposal" instructions on this label.

Put collars on the necks of sheep or goats in fenced pastures where coyote predation is occurring or is expected to occur. Use collars only in accordance with the User Instructions and Use Restrictions contained in the accompanying Technical Bulletin.

STORAGE AND DISPOSAL

Do not contaminate water, food or feed by storage or disposal.

STORAGE: Store Livestock Protection Collars only in original container, in a dry, locked place away from food, feed, domestic animals and corrosive chemicals. Do not store in any structure occupied by humans.

PESTICIDE DISPOSAL: Pesticide wastes are acutely hazardous. Improper disposal of such materials is a violation of Federal Law.

Dispose of Wastes contaminated by 1080 (carcasses, wool hair, vegetation, soil, leather clothing, and water) under three feet of soil at a safe location, preferably on property owned or managed by the applicator and at least one half mile from human habitations and water supplies.

When snow or frozen ground make on-site disposal impractical, up to one cubic foot of wastes may be stored in a leakproof container, in a dry locked, place for up to 90 days.

Alternatively, contact your state pesticide Environmental Control Agency or the Hazardous Waste representative at the nearest EPA Regional Office for guidance in disposing of wastes at approved hazardous waste disposal facilities.

COLLAR DISPOSAL: Damaged irreparable and/or leaking collars must be disposed of by deep burial. Follow the procedures described above and in Use Restriction the Technical Bulletin.

CONTAINER DISPOSAL: Metal and plastic container - Triple rinse contaminated and uncontaminated containers with water. Then puncture and dispose of contaminated containers and rinse as above.

RESTRICTED USE P

Collars shall be sold or transferred only by registrar Livestock Protection Collar applicators. Collars may be used only by livestock Protection Collar applicators or by persons

FOR USE ONLY IN THE STATE OF SOUTH DAKOTA SODIUM FLUOROACETATE LIVESTOCK PROTECTION COLLAR

For use on sheep or goats to kill

ACTIVE INGREDIENT - SODIUM FLUOROACETATE
INERT INGREDIENTS*
TOTAL

KEEP OUT OF REACH OF CHILDREN

DANGER



STATEMENT OF PRACTICES

IF SWALLOWED: Induce vomiting at once with a emetic as directed. If emetic is not available, drink 1-2 glasses of water touching back of throat with finger. Do not induce vomiting in an unconscious person. **PROMPT TREATMENT REQUIRED. ATTENTION IMMEDIATELY.**

IF ON SKIN: Wash the exposed area twice with soap and water.

IF ON EYES: Flush eyes with plenty of water for at least 15 minutes.

IF ON CLOTHING: Remove contaminated clothing and shoes. Wash contaminated leather, including shoes, boots, and gloves. See disposal instructions on the "Storage and Disposal" section. See disposal instructions on the "Storage and Disposal" section.

SEE SIDE PANEL FOR ADDITIONAL PRECAUTIONS

MANUFACTURED FOR: South Dakota Department of Agriculture

U.S. PAT. 3,842,806 EPA ESTABLISHMENT NO. 1080-1080
EPA REGISTRATION NO. 1080-1080

NET CONTENTS: 30.4 grams (1.1 oz.) per small container

NOTICE

Seller makes no warranty, expressed or implied, other than that indicated on the label. Buyer assumes all risk of injury or death when such use and/or handling is contrary to label directions.

(SODIUM FLUOROACETATE).

**DO NOT TOUCH COLLARED
LIVESTOCK, COLLARS, OR DEAD
ANIMALS. DO NOT RELEASE
LIVESTOCK.**

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PELIGRO — VENENO



**PARA CONTROLAR COYOTES QUE ATACAN
AL GANADO, ALGUNAS OVEJAS O CABRAS
EN ESTA AREA LLEVAN COLLARES QUE
CONTIENEN UN VENENO, COMPUESTO 1080
(FLUROACETATO DE SODIO).**

**NO TOQUE LOS ANIMALES, LOS
COLLARES, NI LOS ANIMALES
MUERTOS. NO SUELTE A LAS
OVEJAS O CABRAS.**

PHOTO CAPTIONS

1. When coyotes attack sheep or goats, they usually bite at the throat. The Livestock Protection Collar is an effective way to deliver chemicals selectively to depredating coyotes.
2. A coyote attacked this Angora goat at the rear, but did not puncture the collar. The goat had to be destroyed.
3. Large and small Livestock Protection Collars made by Ranchers Supply, Alpine, Texas. Each toxicant reservoir is 1.5 inches wide and 3.75 inches long on large collars (top) or 2.25 inches long on small collars (bottom). The beige Velcro straps are 0.75 inches wide and 22-24 inches long.
4. Small Livestock Protection Collar on a 30-pound lamb. Note that the toxicant reservoir comes up almost to the ear.
5. Large Livestock Protection Collar on an adult Angora goat.
6. Small elastic-strap Livestock Protection Collar on a 50-pound lamb. In the field tests on Angora goats the rate of collar puncture by attacking coyotes was lower for elastic-strap than for velcro-strap collars.
7. The corners of this small collar tore when the collar was being removed from an Angora goat. To avoid such damage, a knife or scissors can be used to free collar straps from hair or wool.
8. The rubber portion of this collar was poorly attached to the neck straps. Repairs can be made by sewing or stapling neck straps back in position. Only heavy thread or staples should be used.
9. The small collar is too small for effective coverage on this 100-pound lamb.
10. This lamb's collar is too small. Note the unprotected region below the ear. Large collars should be used on lambs of this size.
11. To keep the collar in position on this Angora goat, the forward collar strap was tied to a horn using butcher's twine. Any heavy string or cord will do.
12. An ordinary office stapler can be used to tack collar strap ends in place. These staples are inadequate for reattaching straps to collars (see photo 8).

*Photo 2 by D.A. Wade, Texas Agricultural Extension; other by G. Connolly

13. The collar on this Angora goat has slipped back out of position. If the collar was in this position when a coyote attacked, the collar probably would not be punctured.
14. If collar straps are too tight, they will produce abrasions that become infected and attract flies, as shown on this Angora goat. This problem, which is more common with goats than sheep, can be avoided by frequently checking strap tension.
15. Numbered ear tags are a valuable aid in keeping track of collared livestock. The numbers on this tag can be read at a distance of 50 feet or more.
16. Checking of collared livestock is easy if the animals are trained to come for feed.
17. Typical remains of a collared lamb that was killed and fed upon by coyotes. The collar was punctured.
18. A Livestock Protection Collar punctured by prickly pear thorns. Thorn punctures are smaller than coyote tooth punctures. This damaged collar cannot be reused.
19. This coyote was found dead 0.4 miles from the spot where it attacked a collared lamb and punctured the collar. Laboratory analyses confirmed that it was killed by the collar toxicant, Compound 1080.
20. Flocks of adult Angora goats can be protected with Livestock Protection Collars by adding 5 to 10 collared kids per 100 uncollared adults. Two collared kids appear in this photograph (facing camera, left of center). Test statistics revealed a high rate of coyote selection for kids.

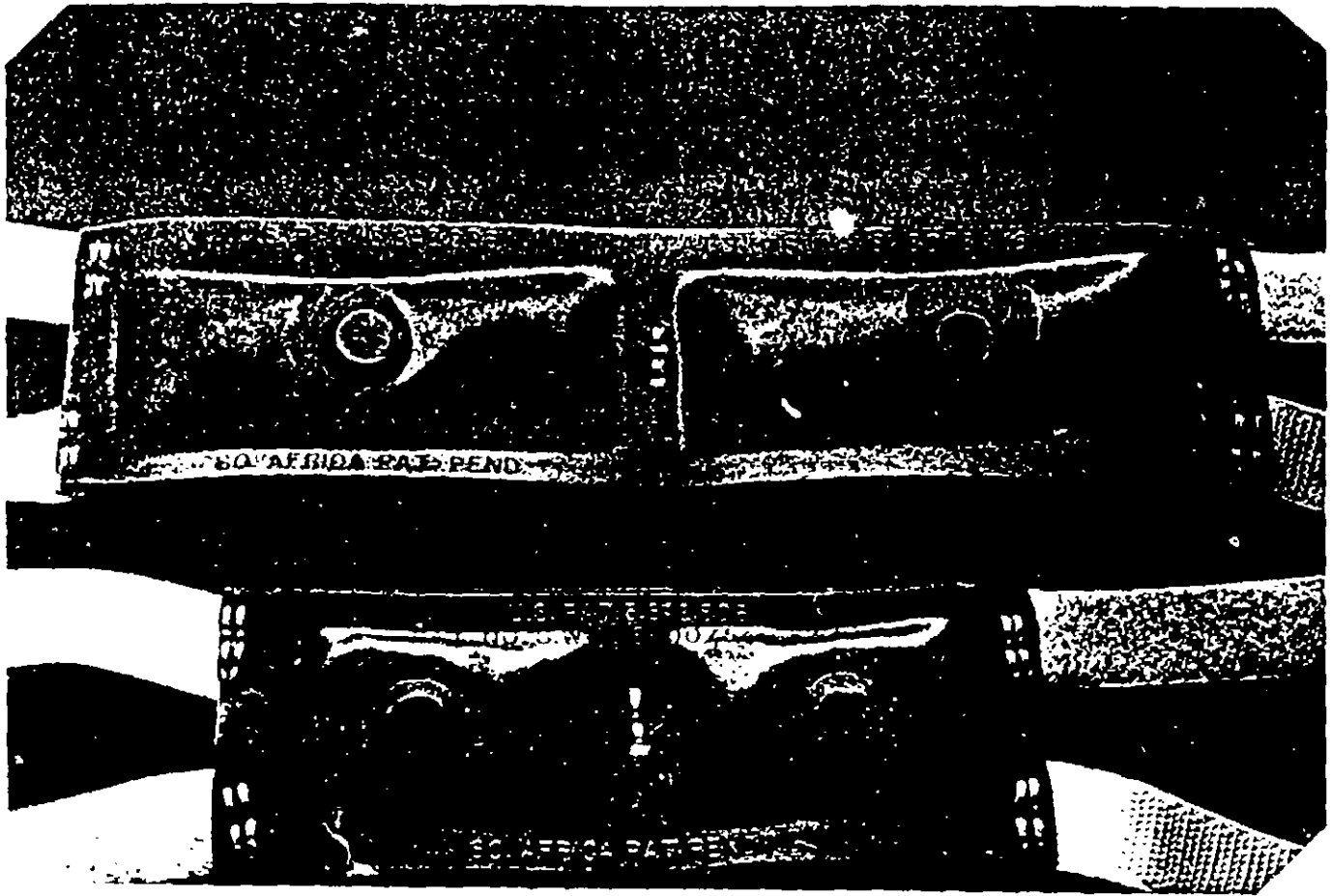


Photo 1



Photo 2

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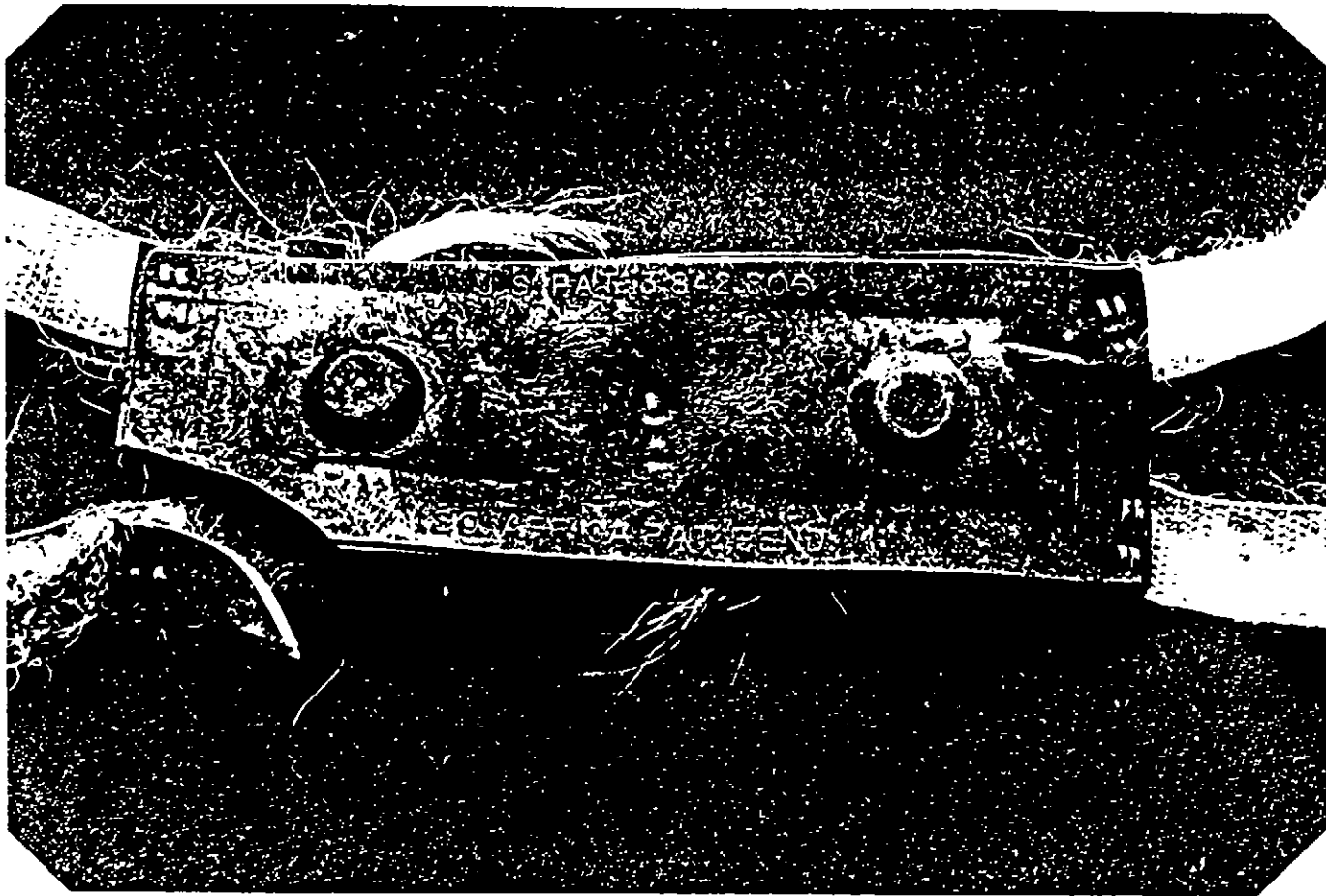


Photo 1



Photo 2



Photo 10



Photo 11





Photo 13



Photo 14

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Photo 15



Photo 16

1004



Photo 11

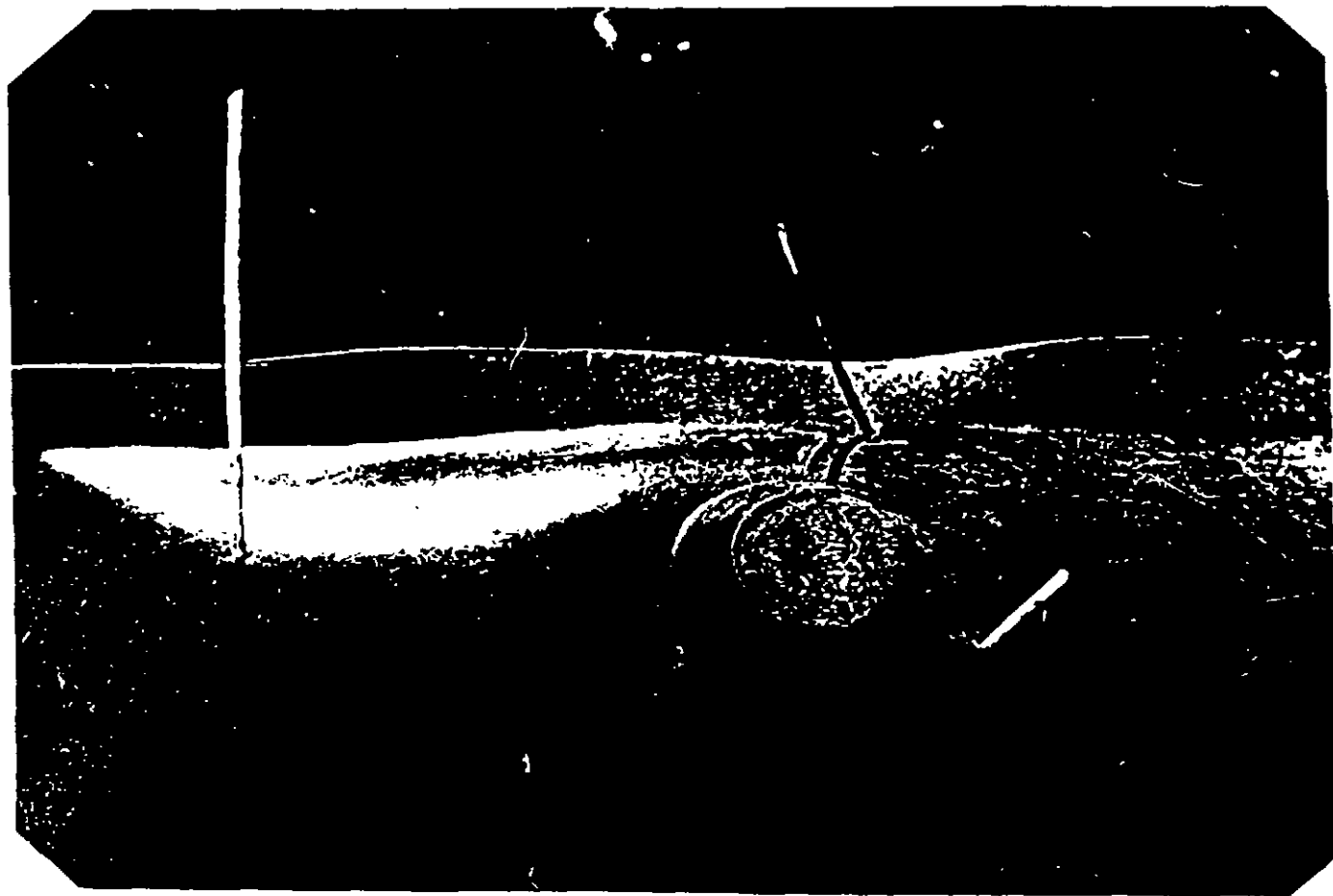


Photo 12



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DATE OF LAST PLACEMENT ON ANIMAL _____

ANIMAL EARTAG NUMBER _____

LAND DESCRIPTION:

NAME OF PASTURE OR LOCATION (Legal Description)

DATES COLLAR CHECKED

(Minimum of Once a Week) _____

DATE COLLAR REMOVED OR LOST FROM ANIMAL _____

REASON FOR REMOVAL: _____

- 1. RETURNED TO POOL MANAGER STORAGE.
- 2. DAMAGE (Indicate type of damage and cause, if known.)

A. If punctured, indicate side damage. LEFT RIGHT BOTH

B. If not punctured, indicate action taken.

Repaired

- 3. LOST (Indicate last known or probable location.)

FINAL DISPOSITION OF COLLAR. Check appropriate answer.

BURIED

LOST

RETURNED TO POOL MANAGER STORAGE.

FINAL DISPOSITION OF CONTAMINATED ANIMALS. (METHOD AND LOCATION)

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SOUTH DAKOTA DEPARTMENT OF AGRICULTURE
LIVESTOCK PROTECTION COLLAR
ACCIDENT REPORT

1) PESTICIDE APPLICATOR:

NAME: _____ Appl. Lic. or cert. No. _____

ADDRESS: _____

DATE OF ACCIDENT: _____

LOCATION: TWSHP _____ RANGE _____ SECTION _____ 1/4 _____

LANDOWNER/LEASEE: _____

ADDRESS: _____

WARNING SIGNS IN USE AT ACCIDENT SITE: YES _____ NO _____

NAME OF PERSON(S) INVOLVED IN ACCIDENT: _____

ACCIDENT RESULTED IN CONTAMINATION OF:

CLOTHING _____ FOOD _____ WATER _____ VEHICLE _____ BLDG _____

OTHER (SPECIFY) _____

WHICH OF THE FOLLOWING WERE INVOLVED:

STORAGE _____ USE _____ TRANSPORTATION _____ REMOVAL _____

DISPOSAL _____ OTHER (SPECIFY) _____

2) INJURED PERSON(S):

NAME _____ AGE: _____

ADDRESS: _____

OCCUPATION: _____

DID PERSON(S) SEE A DOCTOR: YES _____ NO _____

DOCTOR'S NAME: _____

DOCTOR'S ADDRESS: _____

WAS PERSON(S) HOSPITALIZED: YES _____ NO _____

IF YES, WHERE: _____

DID PERSON(S) RECEIVE FIRST AID ON SITE: YES _____ NO _____

3) IF ACCIDENT INVOLVED NON-TARGET OR DOMESTIC ANIMALS:

SPECIES: _____

NUMBER OF ANIMALS FOUND: _____

LOCATION: _____

SUSPECTED CAUSE OF DEATH: _____

WAS ACTUAL CAUSE OF DEATH DETERMINED: YES _____ NO _____

IF YES, HOW WAS IT DETERMINED:

LABORATORY ANALYSIS _____ PHYSICAL EVIDENCE _____

AUTOPSY _____

REMARKS _____

SIGNATURE: _____