

Euthanasia of Dogs and Cats With Sodium Pentobarbital

July 1983



The Humane Society of the United States

Euthanasia

Millions of dogs and cats are brought to public and private animal shelters annually because they are not wanted anywhere by anyone. The most humane disposition for these animals is euthanasia, which means "easy death."

Destroying unwanted animals, many of which are in good health and would make good pets, is abhorred by humanitarians, humane societies and many of the public officials in charge of animal control programs—but it will be necessary until pet owners stop their animals from breeding more and more unwanted litters.

Euthanasia is the most important activity at the animal shelter because the very least that can be done for unwanted animals is to put them to death gently and painlessly without causing them fear or stress.

Euthanasia of animals should be approached with the greatest care that the method used be truly humane. It should be entrusted to the most conscientious and qualified workers only—never to a shelter employee who is careless, indifferent to animal suffering or untrained in animal behavior and euthanasia techniques. The employees must be able to cope emotionally with destroying large numbers of animals while maintaining a concern for the well-being of each individual animal.

Also, it should be a binding responsibility of those in charge of shelters to check the euthanasia procedure frequently and to ensure that the animals are being properly handled and the employees are maintaining a caring frame of mind.

The Technician

The most important component of the shelter's euthanasia program is the employee assigned to the job. By its very definition, euthanasia demands that the person performing it be a technician, well-trained, caring and reliable.

Maintaining a balanced attitude toward euthanasia is not easy. Animal shelters find themselves in the double bind of being responsible for humanely sheltering the animals while eventually destroying most of the animals that have been cared for. Community residents expect their animal control service to keep the streets free of strays, but often show little understanding or concern for the shelter workers who must somehow dispose of these strays.

For the individual employees, it is extremely stressful to destroy healthy, playful animals that they have cared for and come to know.

The following is a section from "The Psychology of Euthanizing Animals: The Emotional Components" by Charles E. Owens, Associate Professor at the University of Alabama Department of Psychology, Ricky Davis, doctoral student in the University of Alabama psychology program, and Hurt "Bill" Smith, director of the Animal Control Academy. It includes recommendations that shelter managers need to follow to help their employees perform animal euthanasia competently and compassionately with minimum stress on themselves.

"It is clear that euthanasia technicians need to vent their concerns about animals to the public (to get support and understanding from society at large as well as from their co-workers); to find constructive and effective methods for dealing with the feelings that accrue from killing animals; and to have a continuous support group that is not only sympathetic to their dilemma but also shares other similar professional concerns.

"There are a number of ways that animal control and animal welfare agencies can help euthanasia specialists deal with euthanizing animals and the resulting negative feelings. Some of the more obvious are:

"1) Allow time at staff meetings for technicians and other personnel to exchange their ideas and feelings on the topic of euthanasia.

"2) Arrange speaking engagements to interested groups, organizations and classes explaining their position and the public's responsibility in making euthanasia necessary. This helps the general public to understand the euthanasia technicians' dilemma and provides a chance for animal care personnel to demonstrate their concern about the animals.

"3) Encourage employees to become involved in daily activities, hobbies, and situations that allow individuals opportunities to relax and to cope with the anger, frustration, or ambivalence connected with euthanasia. This is especially important during the hours after work.

"4) Permit technicians to attend meetings that focus on both the humane and technical aspects of euthanizing animals. This helps the individual to identify with a continuing support group."

The well-being and attitude of each shelter employee is important not only for his or her own sake but also because it affects the employee's general value to the shelter and because it is critical to whether animals are being euthanized humanely.

Obtaining Sodium Pentobarbital

The Humane Society of the United States recommends injection of sodium pentobarbital by a trained technician as one of the most humane methods of animal euthanasia. Employees who euthanize by injection must be trained, skilled and have manual dexterity.

Pentobarbital (technically, pentobarbital sodium) is an effective and humane euthanasia agent for mammals, birds and reptiles. It is a crystalline white powder which when administered as a solution of 6 grains per cubic centimeter (cc) in sufficient quantity produces unconsciousness followed by death. Pentobarbital can be fatal to human beings as well as animals.

Sodium pentobarbital is a controlled substance under both state and federal law. It is generally not difficult for shelters to get the necessary authorization to keep and use sodium pentobarbital.

Several states have laws allowing animal shelters to obtain sodium pentobarbital directly rather than having a licensed veterinarian purchase it. The HSUS can send you a list of states with these laws. Properly licensed shelters in these states will be registered by the federal Drug Enforcement Administration and will be allowed to obtain and use sodium pentobarbital as authorized by the state.

If your state has such a law, you can get complete information from the state agency regulating controlled substances. The agency varies from state to state, and may be the Public Health Department, the Board of Veterinary Medicine, the Controlled Substances Registration Section, or other agency.

For example, in Indiana, animal shelters apply to the Controlled Substances Division of the Board of Pharmacy for controlled substances registration. The shelter sends in an application, a fee and a letter from a veterinarian giving the names and addresses of personnel who will be administering the sodium pentobarbital. The shelter must also be inspected before the certificate of registration is issued.

The HSUS will assist you if you wish to campaign for a state law allowing shelters to purchase the drug directly. Following is the text of legislation passed by the State of Virginia to allow shelters to purchase sodium pentobarbital directly.

A Sample Bill—As Passed By The Virginia Legislature

To amend the Code of Virginia by adding in Article 3, Chapter 15.1 of Title 54, a section numbered 54-524.47:1, to authorize the State Board of Pharmacy to issue a special permit to humane societies to possess sodium pentobarbital and to use it for euthanizing certain animals.

Be it enacted by the General Assembly of Virginia:
1. That the Code of Virginia be amended by adding in Article 3, Chapter 15.1 of Title 54, a section numbered 54-524.47:1, as follows:

§54-524.47:1. The Board shall issue, upon such terms and conditions as it finds proper, to any humane society, which shall make application therefor, a limited permit only for the purpose of buying, possessing and using sodium pentobarbital to euthanize injured, sick, homeless and unwanted domestic pets and animals. The application for such a special permit shall be accompanied by a fee of fifteen dollars, which shall also be the fee for annual renewal.

2. An emergency exists and this act is in force from its passage.

If your state does not have this legislation, you can still obtain sodium pentobarbital under federal regulations. The federal Drug Enforcement Administration requires that a veterinarian who is properly registered by your state obtain a DEA registration as a practitioner at your shelter address (the address at which the pentobarbital will be stored and administered).

DEA allows properly trained shelter personnel to act as agents of the veterinarian. The veterinarian is responsible for ensuring that the drug is properly used and that federal storage and record keeping requirements are met. However, the veterinarian need not be present when sodium pentobarbital shipments are delivered or when the drug is actually used, unless existing state law requires it. Also, the status of the veterinarian's registration at the shelter address does not affect the status of his or her registrations or licenses at other addresses.

You can send for an application for registration with DEA to any of the DEA offices listed at the back of this booklet—check Block No. 4 on the application to receive the official order forms you need to purchase the drug.

You must keep records of the amounts and dates of purchases of sodium pentobarbital and the amount used on each animal. (You are also required to record the purpose for which each dose is used; for shelters, of course, this will be euthanasia.) Federal law requires that these records be retained for two years from date of entry, but if your state law requires that they be kept longer, that requirement is binding. All controlled substances must be stored in a securely locked cabinet or a safe mounted so that it cannot be removed.

Using Sodium Pentobarbital

Pentobarbital can be hypodermically injected in three ways:

- Intravenous or into the vein (IV)
- Intracardiac or into the heart or heart cavity (IC)
- Intraperitoneal or into the abdominal cavity (IP)

Intravenous (IV) and intracardiac (IC) administration offer the advantage of working more quickly, often almost instantaneously. This is important when bringing relief to an injured animal or in other emergencies.

Shelter staff assigned to use pentobarbital hypodermically *must acquire training* from a veterinarian, a nurse or medical technician skilled with hypodermic needles or another person skilled in this method of euthanasia. Attempts by untrained laymen to use the drug hypodermically may cause the animals to suffer.

Injectable pentobarbital is an economical and rapid agent for euthanasia. Animals can be euthanized as quickly as the time required to inject them, usually 20-30 seconds per animal.

Injection

For sodium pentobarbital injection, use a solution of 6 grains of pentobarbital in one cubic centimeter of water. Here are the minimum average doses for injection:

- Intravenous: 1cc per 10 pounds of animal's body weight.
- Intracardiac: 1cc per 10 pounds of animal's body weight.
- Intraperitoneal: 2cc per 10 pounds of animal's body weight.
- Animals under four weeks: at least 1cc.

In all cases, overdose rather than underdose. Also, the solution should always be at room temperature when administered.

Sodium pentobarbital is available in raw powder form, but because of the storage problems associated with powder, shelters will probably find it more convenient to use the pre-mixed solutions readily available now.

Three suppliers of sodium pentobarbital are:

Ganes Chemical (powder only)
Ganes Chemicals, Inc.
1114 Avenue of the Americas
New York, NY 10036
(212) 391-2580

Vortech (pre-measured powder in individual containers)
Vortech Pharmaceuticals Ltd.
6851 Chase Rd.
Dearborn, MI 48126
1-800-482-9389 (in MI)
1-800-521-4686 (outside MI)

Burns-Biotec Laboratories, Inc.
P.O. Box 3113
Omaha, NE 68103
(402) 331-3900
(800) 228-2764 toll-free

Powder can be obtained in one-pound units or up to 20-pounds in bulk. To mix the powder:

— Use one part pure sodium pentobarbital powder to three parts of distilled water. Use 2cc of isopropyl alcohol to each 15cc of solution.

— Wear a dust mask and gloves to keep from inhaling the fine sodium pentobarbital powder or getting it on your skin.

— Pour alcohol into the mixing container. Add the powder and stir until dissolved. Add water. Add a drop of methyl violet to color the solution (a safety precaution).

— Seal the storage bottles with polyethylene plastic stoppers and apply labels according to regulations.

— Store the solution according to regulations. Make sure it is at room temperature before use.

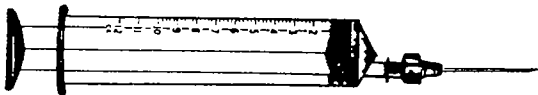
Intravenous Injection

This is the method most commonly used by veterinarians. The veins injected are usually the cephalic or large veins in the forelegs. Shelter employees must be trained by a veterinarian or qualified technician to locate the vein and inject the solution.

The vein must be compressed, requiring either a tourniquet or the aid of an assistant. For cats, use a size 25- or 24-gauge one-inch needle. For dogs, use a size 22- or 24-gauge one-inch needle.

You should also use a syringe that has an eccentric or off-center hub for the needle, so the syringe can rest flat against the limb and the needle can be inserted as close to parallel to the vein as possible. To make sure the needle is in the vein, withdraw the syringe plunger slightly; blood will flow into the syringe if the needle is in the vein.

Intravenous injection is perhaps the most aesthetically pleasing euthanasia method to the observer, and the animal's death is very rapid when the proper dose is given.



Intracardiac Injection

Here the solution is injected directly into the heart or heart cavity. Death is almost instantaneous. Often the animal will collapse before the needle is withdrawn. However, prior to the handling of any animal for euthanasia, and the choice of type of injection to be used, each animal should be evaluated as to general temperament and physical characteristics.

Many animals, particularly dogs, tolerate handling well and will sit or lie quietly during the euthanasia process. Often the handling of cats and

excitable or hyperactive dogs is not so easy. Therefore it is advisable to tranquilize or use an intraperitoneal injection of sodium pentobarbital prior to an intracardiac injection. Intraperitoneal injections of sodium pentobarbital should be used only on cats, and never used on dogs. Those tranquilizers which are appropriate are Ketamine or Acepromazine for cats, and Acepromazine or Rompun for dogs. Pre-sedation, or the use of intraperitoneal injections in cats, is especially important prior to intracardiac injections since it is very stressful for the animal, as well as for the technician, to miss the heart and inject into the lungs, which are located very near the heart.

The strongest heart beat is usually found on the animal's left side between the fourth and fifth ribs. By feeling the heartbeat with your fingers, it is possible to detect the exact location of the heart. The beat or pulsations will be strongest directly over the heart, and in lean short-haired animals may be visible. When the animal is standing or partially sitting up, the heart will rest on the sternum or breast bone.

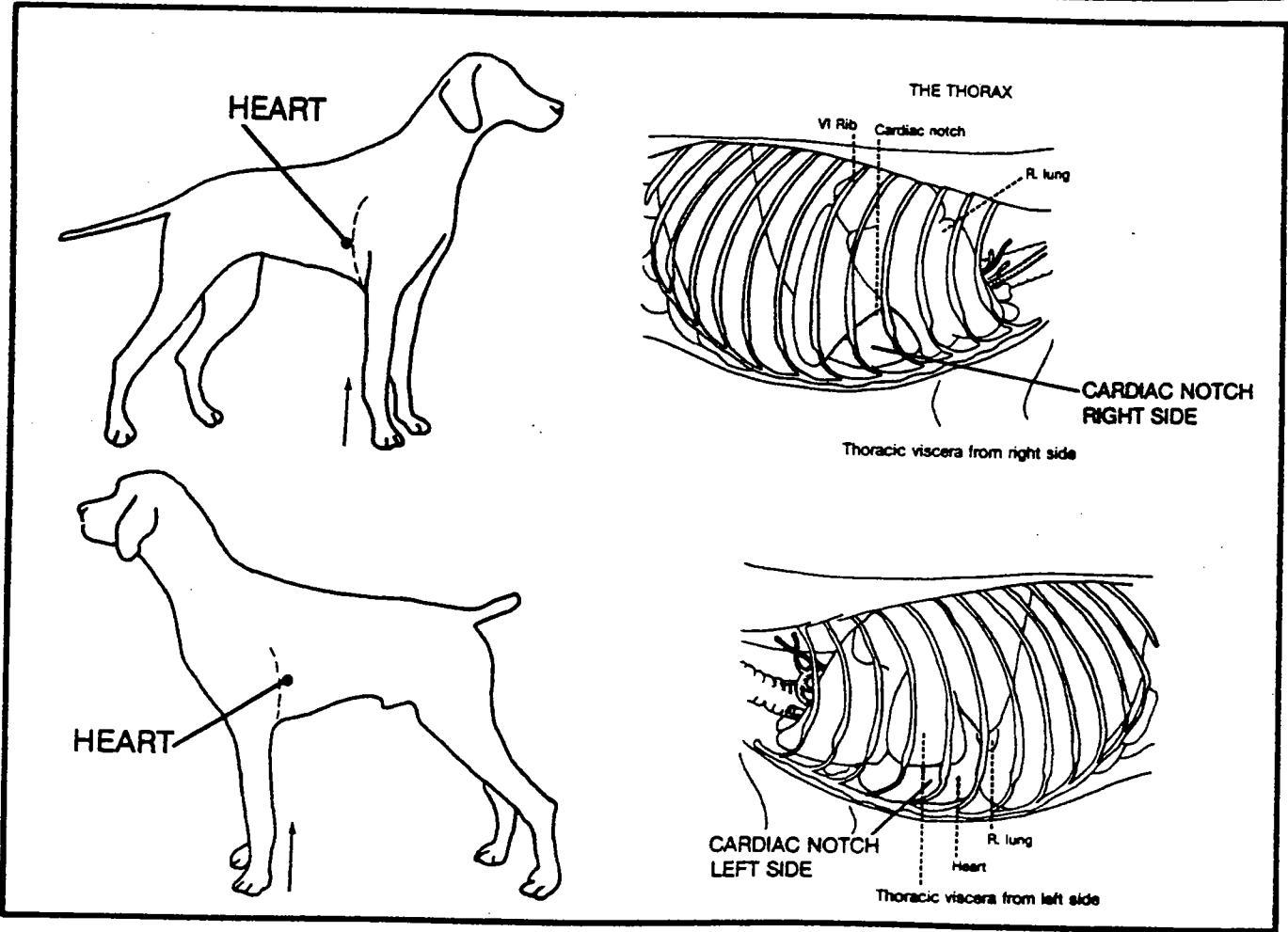
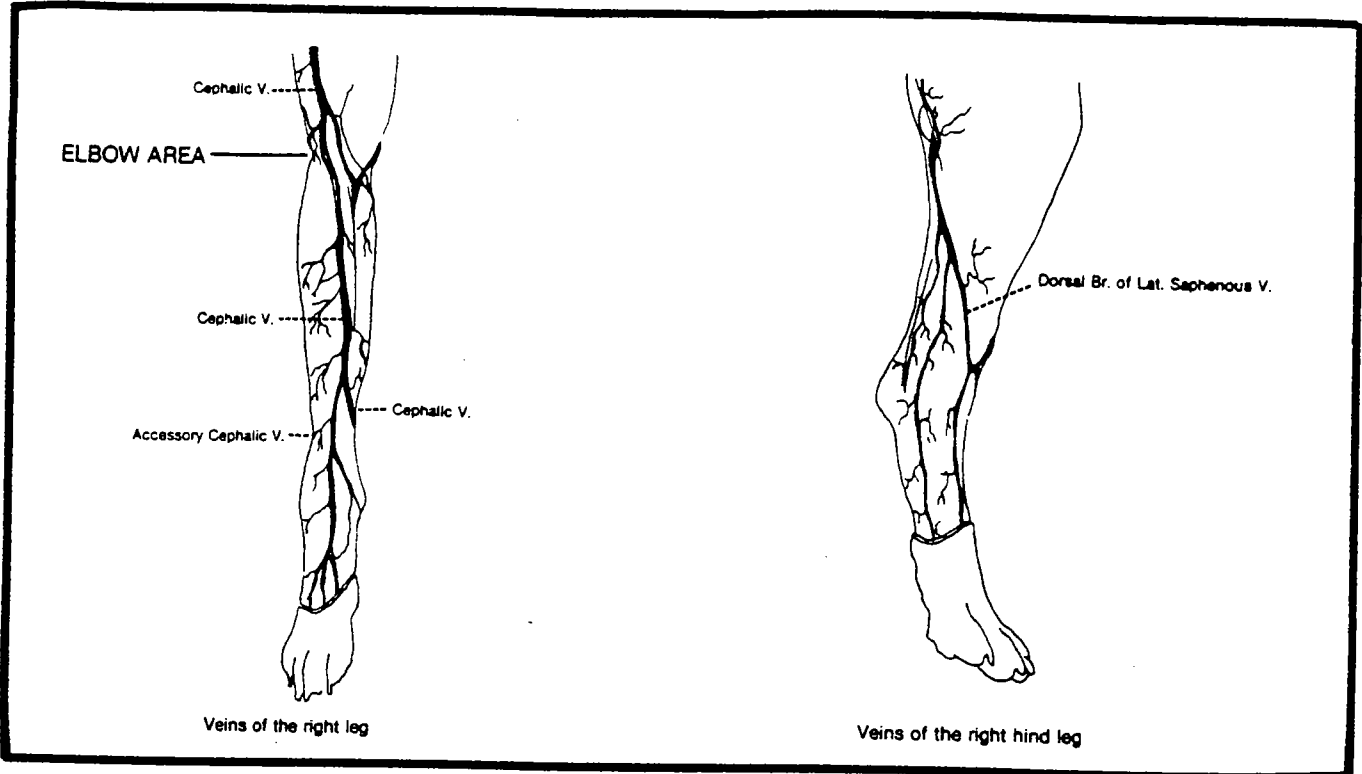
Before inserting the needle, test it with your fingers or a cotton ball to make sure it is sharp and without rough edges. The length of the needle must reach through the skin, muscle and fat into the heart itself. Small and thin animals will require a 20-gauge 1½-inch needle. Large and obese animals will require an 18-gauge two-inch needle.

While an assistant holds the animal's neck and speaks gently to it, insert the needle between the fourth and fifth ribs where the heartbeat is strongest. You may wish to have the assistant firmly pat the opposite side of the rib cage during insertion of the needle to distract the animal, although most animals will have no reaction to the needle.

You will know the needle is in the heart when the syringe begins to move with each pulsation of the heart. Withdraw the syringe slightly; if blood flows back into the syringe, the needle is in the heart.

Inject the appropriate dosage for the animal's body weight. Always overestimate rather than underestimate the dosage. The animal should become unconscious almost immediately. If unconsciousness is not immediate, continue to pet or hold the animal and speak to it soothingly.

The intracardiac method is easily used on injured, diseased, and small animals.



Intraperitoneal Injection

This is the easiest method to learn. Its main disadvantage is that unconsciousness and death are not instantaneous. The average dose is 2cc per 10 pounds of the animal's weight.

Intraperitoneal injection is very effective on wild animals and animals that are difficult to handle. Animals in humane wire traps can be injected into the peritoneum (abdominal cavity) through the side or end of the cage. This eliminates stress and anxiety from being handled. The intraperitoneal method also works well on monkeys and other exotic species that cannot be held as easily as tame animals.

The animals rarely react to the inserted needle. After injection of the solution, the animal gradually drifts into unconsciousness. Some may go through a state of excitation and disorientation and should be gently restrained in a small cage to prevent trauma and to facilitate a peaceful death. Death follows quickly if the proper dose has been given.

A one-inch needle should penetrate deeply enough for intraperitoneal injection without going deep enough to hit vital body parts and cause pain. Insert the needle about an inch below and to one side of the navel.

A Guide to the Proper Needle and Syringe Size

kittens, newborn	24 gauge with small
to 2 pounds	syringe (such as the set used for insulin)
cats and puppies, 3-10 pounds	24-gauge, 5cc syringe
dogs, 10-24 pounds	24-gauge, 10cc syringe
dogs, 25-49 pounds	22-gauge, 20cc syringe
dogs, 50-100 pounds	20-gauge, 30cc syringe
dogs, more than 100 pounds	20-gauge, 50cc syringe

The same needle and syringe may be used repeatedly as long as you check often with your fingers or a cotton ball to make sure the needle is sharp and without rough edges.

Oral Administration

When it is not possible to handle the animal to inject sodium pentobarbital, the drug can be administered orally. This method can be used with dogs, cats and other small animals, with the drug in the form of capsules or tablets in the food. Generally, the oral method is more successful with

dogs than with cats, since cats are often unwilling to eat medicated food. However, tablets in cream cheese work well with cats.

For oral administration, pentobarbital may be bought in either bulk powder or tablet form. You can make your own capsules with bulk powder and empty gelatin capsules. One pound of pentobarbital will make about 1200 5-grain capsules.

Use one grain of pentobarbital for each pound of body weight. You can estimate the weight of the animal, but remember: overdose, never underdose.

The following table gives the dosage for several different animals:

Cairn terrier	15 grains
Fox terrier	20 grains
Boston terrier	25 grains
Cocker spaniel	30 grains
Boxer	70 grains
Collie	75 grains
Great Dane	90 grains
Tiny kitten (eyes not opened)	2 grains
Large kitten	3 grains
Adult cat	8-20 grains
Squirrel	3 grains
Small bird (such as robins)	1½ grains

When you use capsules for dogs, plan to do the euthanasia work late in the afternoon or in the evening when there are no visitors in the shelter and the dogs tend to be quiet and to sleep.

The drug works most quickly if the dog has an empty stomach. Give the dog very little liquid during the day the drug is to be administered. After administration, the dog may take liquids freely. Some shelters feed a very light supper at about 4:00 pm to dogs that are to be euthanized, with the capsules in a small amount of food so the pentobarbital is absorbed quickly.

Confine each dog that is to be euthanized in a relatively small cage. There is a period after administration when the animals lose control of their legs, and confinement gives them more protection.

A dog that is relatively closely confined also goes to sleep more quickly than one that is permitted to wander in a large room or run.

Using 5-grain capsules, mold each capsule into a small pellet of canned dog food and feed the dog as you do regularly. Because dogs bolt such food unchewed, administration will be easy. Some shelters have a good bone to give to each dog

after it has taken the pentobarbital. This induces the dog to lie down to work on the bone and to remain quiet.

With most dogs, the first effect will be apparent in about 20 minutes. The first sign will be gradual loss of control of the legs. The dog will show no sign of distress but will show a drowsiness that will become more pronounced. At about this time, the dog will want a drink of water. The water may speed the action of the drug.

If the dose of pentobarbital has been adequate, and nothing further is done, death will come slowly and gently. However, because it could take several hours and because there is the possibility that an animal could revive, it is better to give the animal an injection of additional sodium pentobarbital as soon as it is unconscious.

If the animal is not injected, check it periodically to make sure it has not revived as a result of receiving an inadequate dose of pentobarbital. Above all, never send bodies of euthanized animals from the shelter or cremate them until they are stiff and cold.

Because cats will not usually eat food containing capsules or tablets, pentobarbital may have to be administered by hand. First, coat the capsule with margarine. Hold the cat gently and firmly on a table, point its nose up and carefully open its mouth with your fingers. Place the capsule far back in its throat, close its mouth and

stroke its throat until the pill is swallowed. The drug works slowly as described above. Again, however, it is advisable to inject the cat with additional pentobarbital when it is unconscious.

General Guidelines

When euthanizing a mother and young, euthanize the mother first so she does not undergo the stress of having her young removed from her.

The animals' bodies should not be disposed of until it is absolutely certain that they are dead, the onset of rigor mortis being the best indication.

To minimize stress on both the animal and the technician, the euthanasia room should be as calm as possible, well-lighted, well-ventilated and kept at a comfortable temperature.

If handling an animal will cause it greater stress, a tranquilizer such as Acepromazine or Rompun should be used.

It is not acceptable to use succinylcholine chloride as a tranquilizer or euthanizing agent. Its use is not humane.

The HSUS is prepared to assist any animal shelter in providing a humane disposal for its animals. Address your inquiries to:

Companion Animals Section
The Humane Society of the United States
2100 L St., NW
Washington, DC 20037

Pentobarbital in quantity can be fatal. The Humane Society of the United States offers the advice given above only on request from responsible humane societies and public animal shelters, and assumes no liabilities for any use of pentobarbital.

DEA Offices

Boston District Office
JFK Federal Building
Room G-64
Boston, Massachusetts 02203
617/223-2170

Buffalo Resident Office
268 Main Street
Suite 300
Buffalo, New York 14202
716/846-4421

Hartford District Office
450 Main Street
Room 628-E
Hartford, Connecticut 06103
203/244-3230

Long Island District Office
1 Huntington Quadrangle, Suite IC-02
Melville, New York 11746
516/420-4500

Newark District Office
Federal Office Building
970 Broad Street
Newark, New Jersey 07101
201/645-6060

New York City District Office
555 West 57th Street
New York, New York 10019
212/399-5018

Philadelphia District Office
William J. Green Federal Building
600 Arch Street, Room 10224
Philadelphia, Pennsylvania 19106
215/597-9540

Pittsburgh District Office
Federal Building
1000 Liberty Avenue
Room 2306
Pittsburgh, Pennsylvania 15222
412/644-3390

Atlanta District Office
United Family Life Building
230 Houston Street, N.E.
Suite 200
Atlanta, Georgia 30303
404/221-4412

Baltimore District Office
955 Federal Building
31 Hopkins Plaza
Baltimore, Maryland 21201
301/962-2224

Birmingham Resident Office
236 Goodwin Crest
Suite 520
Birmingham, Alabama 35209
205/229-0620

Greensboro Resident Office
925 West Market Street
Room 111
Greensboro, North Carolina 27401
919/378-5203

Miami District Office
8400 N.W. 53rd Street
Miami, Florida 33166
305/591-4980

Nashville Resident Office
Estes KeFauver Federal Building
— U.S.C.H.
Room A929
801 Broadway
Nashville, Tennessee 37203
615/251-5988

New Orleans District Office
1001 Howard Avenue
New Orleans, Louisiana 70113
504/589-2171

San Juan District Office
Housing Investment Building
Suite 514
416 Ponce de Leon Avenue
Hato Rey, Puerto Rico 00919
809/754-6450

Tampa Resident Office
700 Twiggs Street
Suite 400
Tampa, Florida 33602
813/228-2178

Chicago District Office
1800 Dirksen Federal Building
219 South Dearborn Street
Chicago, Illinois 60604
312/353-1234

Cincinnati District Office
Federal Office Building
550 Main Street
Room 7405
Cincinnati, Ohio 45202
518/684-3571

Cleveland District Office
601 Rockwell, Room 300
Cleveland, Ohio 44114
216/293-3705

Des Moines Resident Office
U.S. Courthouse
P.O. Box 1784
Des Moines, Iowa 50309
515/862-4700

Detroit District Office
357 Federal Building
231 West Lafayette
Detroit, Michigan 48226
313/226-7290

Indianapolis Resident Office
575 N. Pennsylvania, Room 290
Indianapolis, Indiana 46204
317/331-7977

Kansas City District Office
U.S. Courthouse
1150 Grand Avenue
Suite 400
Kansas City, Missouri 64106
816/758-2621

Minneapolis Resident Office
Federal Building
110 South Fourth Street
Room 402
Minneapolis, Minnesota 55401
612/725-2783

St. Louis District Office
Chromaloy Plaza, Suite 200
120 South Central Avenue
St. Louis, Missouri 63105
314/279-3264

Dallas District Office
1880 Regal Row
Dallas, Texas 75235
214/767-7250

Denver District Office
U.S. Custom House
Room 316
P.O. Box 1860
Denver, Colorado 80201
303/837-3951

Phoenix District Office
Valley Bank Center
201 North Central, Suite 1980
Phoenix, Arizona 85073
602/261-4866

Los Angeles District Office
350 South Figueroa Street
Suite 800
Los Angeles, California 90071
213/688-3344

Portland Resident Office
Terminal Sales Building
1220 S.W. Morrison
Suite 706
Portland, Oregon 97205
503/423-3371

San Francisco District Office
450 Golden Gate Avenue
Box 36035
San Francisco, California 94102
415/556-3325

Seattle District Office
221 1st Avenue West
Suite 200
Seattle, Washington 98119
206/399-5996