SB

25

Municipality of Anchorage

POUCH 6-650
ANCHORAGE, ALASKA 99502-0650
(907) 264-4111

TONY KNOWLES, MAYOR

DEPARTMENT OF HEALTH AND ENVIRONMENTAL PROTECTION

February 9, 1983

The Honorable Senator Joe Josephson
Alaska State Senate
Pouch V
Juneau, AK 99811

Ref: Senate Bill No. 25

Dear Senator Josephson:

My understanding is that if SB 25 were passed, it would remove from State statute the current prohibition against use of rapid decompression as a method of killing animals. The Municipality of Anchorage Department of Health and Environmental Protection does not consider the decompression chamber to be the most acceptable means of humane euthanization. We use injection of sodium pentobarbital and have found this to be the best method.

You may be interested to know that in the last ten years the rapid decompression chamber has fallen into disfavor with an increasing number of animal control and humane organizations. Eighteen states have, in fact, outlawed the chamber. The Municipality's animal control contractor, Smith Security, Inc. discontinued decompression upon assuming operation of the Anchorage program in 1980.

The Humane Society of the United States, the principal national animal welfare group, has for some time opposed rapid decompression. Enclosed for your reference is the society's paper on the issue. Also provided as background are several other statements, including two letters written to legislators several years ago when the current prohibition was being discussed.

As is explained in the enclosed exerpt from the July 1, 1978 American Veterinary Medical Association Report on Euthanasia, "The rapid decompression method has, among others, these drawbacks: equipment design and maintenance malfunctions; accidental recompression; painful physical effects (e.g., bloating) of pressure change; and incomplete user understanding of hypoxia."

I have learned from the Drug Enforcement Administration of the Department of Justice that local animal control officials who wish to use sodium pentobarbital, a controlled substance, can contact the DEA to arrange for acquisition of the drug. The Municipality of Anchorage would be willing to assist animal control agencies from other parts of Alaska to secure training in the injection method.

There are also several non-controlled injectible enthanasia agents available on the open market. An example is "T-61", made by American Hoechst Corporation. These are also useful agents and more reliable than decompression in my opinion.

Sincerely,

Rodman Wilson

Rodman Wilson, M.D.
Director, Department of Health
and Environmental Protection

D2/c/RW

Why The HSUS is Opposed to the Use of the High Altitude Decompression Chamber for Animal Euthanasia

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

7/80

THE HUMANE SOCIETY OF THE UNITED STATES IS OPPOSED TO THE USE OF THE HIGH ALTITUDE DECOMPRESSION CHAMBER FOR ANIMAL EUTHANASIA.

Every year, more than 13 million unwanted animals are destroyed by public and private animal shelters in the U.S. Many of these dogs and cats are destroyed in high altitude decompression chambers - a method The HSUS considers inhumane.

Animals are loaded into a tank 33" by 42" and the door is securely fastened. A vacuum pump is turned on to remove the air in the tank, simulating the low oxygen pressure of high altitudes.

Because military pilots have experienced euphoria and then unconsciousness in high altitudes, the theory is that the animals become unconscious and then die peacefully from lack of oxygen.

The reality is different. Because of the rapid simulated ascent in the decompression chamber, the animals cannot vent their sinuses or other body cavities to release expanding internal gases, and they show signs of fear and pain before becoming unconscious.

Anyone who has experienced discomfort going up several stories in a speedy elevator or changing altitudes rapidly in an airplane may be able to imagine at least partly the sensation of a simulated rise of 55,000 feet in the decompression chamber used for animal euthanasia.

Sometimes animals find pockets of oxygen in the chamber and survive the entire decompression-recompression cycle. Even proponents of this euthanasia method acknowledge that animals get internal ruptures during the cycle, presumably after they lose consciousness. But the animals that survive the cycle revive and emerge from the chamber suffering these painful internal injuries.

Because practical, humane alternatives are available, the following states have already banned the use of the high altitude decompression chamber for animal euthanasia: Arizona, Maine, Massachusetts, Virginia, Maryland, California, Arkansas, Connecticut, Idaho, New York, Tennessee, South Carolina and Nevada.

THE HUMANE SOCIETY OF THE UNITED STATES URGES THAT THE DECOMPRESSION CHAMBER BE OUTLAWED.

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1) Decompression chambers are NOT like high altitude simulators used by the military, as claimed by proponents of decompression for euthanasia.

The decompression chamber generally used by animal shelters and municipal pounds is the "Euthanair," manufactured by a company in California (one of the states that has banned its use). The animals are loaded into the chamber, 33" x 42", and the air in the chamber is withdrawn by a vacuum pump.

Proponents of the chamber liken this to experiments in simulated high altitude conducted by the military in connection with space exploration, claiming the lack of oxygen produces a feeling of euphoria, then unconsciousness.

However, as one animal expert put it, "There is a great difference between the expensive and efficient Air Force decompression units which are used to test the effects of hypoxia (oxygen deficiency) on humans and the steel drum which is called a decompression chamber in the back rooms of animal shelters."

The military equipment is considerably more sophisticated, and is operated by scientists and technicians. Promotional literature from the Euthanair company itself describes the working mechanism simply as "motor and pump."

Further, the military personnel participating in the tests are in top physical condition, without any respiratory or intestinal conditions that would prevent them from venting the gases expanding in their bodies as they ascend.

There are also reports that the effect of hypoxia on humans may not necessarily be euphoria. The Institute for the Study of Animal Problems, a division of The HSUS, states in its report, "Euthanasia of Dogs and Cats," that:

> "Armstrong et al. (1961) noted that some human beings experienced distress rather than euphoria, which is commonly believed by proponents of this method to be experienced by animals undergoing decompression. More important is the fact that human studies are hardly comparable to the high (explosive) rate of decompression (55,000 feet in 60 seconds) used to euthanize animals."
>
> (Armstrong, H.G. et al. (1961) Aerospace Medicine. Williams & Wilkins Co., Baltimore, Md., U.S.A.)

2) Animals suffer severe physiological damage during the decompression-recompression cycle before they lose consciousness.

Proponents of decompression for animal euthanasia say that if the animals do suffer physiological damage which would cause pain, it is after they lose consciousness.

The American Humane Association held an informal conference on euthanasia in May, 1964, attended by AHA representatives, scientists and U.S. Air Force personnel. The report from that meeting includes statements by the participants that internal injuries -- middle ear hemorrhage, engorgement of organs with blood, lung damage, the "bends" -- do not occur during the decompression stage of the cycle, but they occur instead during recompression, after the animal has succumbed to unconsciousness and death.

However, the claim that animals become unconscious before the damaging effects of decompression-recompression take place is in question. Also, animals that survive the entire cycle emerge from the chamber with the internal injuries described above.

Dr. George P. Biro, Assistant Professor in the Department of Physiology, University of Ottawa, studied the technical specifications and literature on the Euthanair, and wrote:

> "...I think that I cannot accept, without reservations, the claim that the Euthanair equipment permits a safe and absolutely humane answer to the problem of the disposal of unwanted animals. I think it is relatively easy to operate and allows relatively large 'turnover'; it does subject the animals to pain and suffering during the period prior to loss of consciousness."

The Institute for the Study of Animal Problems, a division of The Humane Society of the United States, prepared a report on the various methods of euthanasia in use today. Following are excerpts from the section on high altitude decompression:

> "Humans rapidly learn to equalize the pressure inside and outside the middle ear by forcing open the Eustachian tube directly, or by swallowing. Matthews (UFAW)* states that laboratory animals undergoing even slow decompression

> *(Matthews, B.H.C., Statement from Universities Federation for Animal Welfare.)

demonstrate their inability to equalize the pressures by scratching at their ears. He adds that when anesthetized cats were decompressed so that no voluntary equalization could take place, the damage to the ears was severe.

"Upper respiratory infections often involve the Eustachian tubes to an extent where inflammation prevents adjustments to equalize the pressure in the middle ear. Virus infections involving the upper respiratory tract are very common in cats and are common in dogs. In both species they are a frequent reason for owners to seek destruction of their pets. Stray animals in animal shelters also have a high incidence of such infections which are often overlooked; sick and healthy pets are usually destroyed indiscriminately where there are no alternatives other than decompression.

"Pain in the sinuses...With upper respiratory infections blocking off the entrances to the sinuses, pain in these areas could be acute.

"Abdominal pain...This would arise in an unknown percentage of cases as a result of expansion of gas trapped in the intestinal tract. (Sudden reduction of the atmospheric pressure to about one-fifth its normal value will result in a six-fold increase in volume for any trapped gases). With this likelihood, and the untold reactions described in the paragraph above, there is growing concern over the humaneness of the decompression method in the U.S., especially since there are less debatabel and variable alternatives. If there is less than 1% incidence of painful side effects either demonstrated or suspected, and if it is not practical to separate those animals that are more likely to suffer under rapid decompression -- and euthanize them more humanely -- this method should not be considered humane."

The report also points out that with the decompression effect on the lungs, animals would be unable to display any distress vocally.

The ISAP report also includes the following statement from Dr. J.T. Kalberer:

"As one versed in the field of decompression sickness, I can say that the pathogenesis of shock is acute dybarism by simulated high altitude still remains controversial. To give an indication of the clinical picture concerning the suffering experienced by animals subjected to "explosive" decompression, I quote from a research paper of mine, which appeared in the journal Aerospace Medicine, Vol. 40, page 1071, 1969. "Shortly after decompression, animals exhibit

difficulty in breathing ("chokes"), begin scratching, show little motor activity, and, in most instances, die within minutes (up to 15). For a few seconds preceding death, the animals jump about erratically, have severe respiratory distress with hiccough-like spells, twitch, fall on their backs, gasp several times, and expire. In some instances you can even get enlarged abdomens due to gaseous distension of the gastrointestinal tract. These facts are the result of well controlled research experiments which had to be carried out so that this Nation could safely land men on the moon. This work was done also in an effort to make undersea exploits safer. It is evident that these animals are subjected to a painful and grotesque last few seconds of life where in some cases the process can last several minutes....It is not possible for me to agree with the statement that the Euthanair machine or any other high altitude decompression chamber is more 'expedient' for destroying large numbers of animals, as too often animals have different responses to simulated high altitude conditions....I am in absolute agreement with members of The Humane Society of the United States, and the many veterinarians who are of the opinion that the injection of a barbiturate, namely sodium pentobarbital, is a far more humane method of euthanasia than is the high altitude chamber method."

Further, The HSUS has received reports from local observers who have seen animals survive the decompression-recompression cycle.

A county supervisor for Orange Co., California, Philip Anthony, made a study of euthanasia methods and included the following comments in his final report:

"From my own observations through the viewing port in the decompression chambers at our Orange County Animal Shelter, I can tell you that the animals (dogs in the cases I witnessed) become obviously agitated and distressed within a few seconds after the vacuum pump is turned on. They all gasped noticeably, and most yelped and circled frantically. Within a minute or two, or three they gradually collapsed to the floor of the chamber with tossing about of their heads and forequarters. In their final conscious seconds there was more gasping and then final twitching and minor convulsions. After two or three minutes, say up to 200 seconds of obvious distress, the animals were collapsed on the floor of the chamber apparently unconscious.

"To put this kind of experience in perspective, the decompression chamber process is equivalent to you or I being removed from essentially sea level here in Orange County to twice the altitude of Mount Everest in less than a minute!..."

3) There are acknowledged limitations on the use of the high altitude decompression chamber.

It has been recommended even by proponents of decompression for animal euthanasia that the chamber not be used for kittens and puppies or for old or diseased animals.

However, a June, 1978, report on decompression from the Sonoma County, California, Grand Jury points out that shelters and pounds receive large numbers of kittens and puppies that have to be destroyed.

The report states,

> "This factor alone would contraindicate major use of decompression chambers in these facilities.
>
> "All of the information that we received...stressed that 'animals suffering from upper respiratory infections could easily have blocked sinuses. In these, the expansion of unventable air would cause excruciating pain,' also, 'blocking of the eustachian tube by mucous, making decompression impossible without severe pain or injury to the ear drum.'...
>
> "Many dogs and cats arriving at shelters are likely to be suffering from upper respiratory distress which may go unnoticed even if some effort is made to screen the animals. This is another factor which, by itself, would seem to contraindicate the use of the decompression chamber as the chief method of euthanasia in pounds and shelters."

Dr. Gary D. Baumann, a Mesa, Arizona, veterinarian, made a report to the Arizona legislature on the use of the chamber, including the following comments:

> "Animals less than four or five months should not be placed in the chamber. Younger animals have much greater tolerance to lack of oxygen...Some may have to be run through the chamber again, disposed of by other means, or perhaps placed with animals assumed dead only to recover consciousness while under bodies, buried, or going into cremation...
>
> "...animals should be examined for signs of disease before they are placed in the chamber. Minor upper respiratory disease, common in the animal population and especially in stress situations, can cause severe pain in decompression."

One of the points argued in favor of the chamber is its supposed speed and efficiency. It is unlikely that shelter employees trying to dispose of animals as quickly as possible will stop to separate out diseased and other animals that should be euthanized by other methods. Nor will they consult a veterinarian on individual cases.

In fact, chambers are more often overloaded to process more animals, causing additional tension and distress for the territorial dogs and cats. The MU or medium unit Euthanair machine generally in use is described in Euthanair literature as 33" by 42" with the capability of destroying up to 50 animals per hour.

Loading the machine takes at least two minutes, and operating it correctly requires one and one-half minutes to run and 10 minutes (or more for some animals) to hold. Unloading the machine and cleaning out the vomit, urine and feces requires at least another five minutes.

Since a chamber 33" by 42" can comfortably hold only one German shepherd-size dog or four beagle-size dogs, it is mathematically impossible for the Euthanair to destroy as many animals as quickly as the literature claims.

If an alternate method of euthanasia is in fact provided for certain animals, the alternate can just as easily be provided for all.

4) The high altitude decompression chamber is subject to malfunction and operation difficulties.

Proponents of decompression for animal euthanasia acknowledge that the chamber must be in good working order and that operators must be conscientious and properly trained.

In the 1978 report on euthanasia from the American Veterinary Medical Association panel on euthanasia methods, decompression is described as:

"...satisfactory...provided the equipment is properly constructed, correctly maintained, and proficiently operated. Because many difficulties have arisen using decompression and because there is a general lack of understanding of how hypoxia affects animals, other methods of euthanasia are preferable."

Proper maintenance and proficiency of use are significant qualifications. In 1974, 192 euthanasia chambers were inspected by the State of California, and 62% were found to be inoperable. The chamber is susceptible to gauge and seal malfunction; it may recompress in the middle of a cycle. Also, there is virtually no repair service available.

The October, 1964, conference of the American Humane Association Euthanasia Committee reported that Euthanair operators should follow a procedure with no less than 13 steps, many of them with more than one specific action, and with a set of color codes. The procedure includes sorting animals to avoid placing hostile animals together and checking gauges throughout the cycle

Such a lengthy complex procedure invites misinterpretation and misuse. It is unlikely that shelter employees trying to process animals in a hurry will take the time to seek expert help if a problem arises.

5) <u>There are practical alternatives available for animal euthanasia to replace the high altitude decompression chamber</u>.

The HSUS receives many requests for information on sodium pentobarbital injection or filtered carbon monoxide for animal euthanasia, as more and more shelters and pounds change from decompression to these other methods.

Following are statements on the availability of alternate methods of euthanasia for shelter animals:

Dr. John W. Oliver, DVM, of Saratoga, California, report on "The High-Altitude Decompression Chamber vs. Sodium Pentobarbital Injection":

> "To develop some comparative figures, we ran a number of timed studies at the Humane Society of Santa Clara Valley. We used the machine according to state law, and used the lay help that had normally operated the machine. For the accepted load of 10 cats, our times ranged from 35 to 40 minutes. This involved loading the cats from their cages into the portable euthanasia cages, loading the chamber, running it for the time prescribed by Section 597W, unloading and cleaning as required by 597W. This gave us a labor cost of 31.6 cents per cat, very close to the 30 cent figure offered in support of the chamber by the City of Los Angeles.
>
> "We then tabulated our expense for labor and drugs for several hundred cats euthanized by injection. Our labor cost for one man, injecting one cat per minute by the intraperitoneal route, was 8.3 cents per cat. The cost of the drug, when purchased at $4.90 per 100 cc. was 9.8 cents per cat for a total of 18.1 cents, a saving of 13.5 cents per cat.
>
> "We then did a study on several hundred dogs. All of these dogs were given intravenous injections by a team of two men trained by myself. They averaged 25 dogs per hour. The labor costs were 40 cents per dog and the cost of drugs averaged 12.2 cents per dog (average 25 pound dog requires 2.5 cc.) for a total of 52.2 cents.
>
> "Certainly the average of 18.1 cents for cats and 52.2 for dogs (average all animals: 35.15 cents) compares favorably with the 30 to 45 cents figure offered in support of the chamber...

"I have trained numerous people (for sodium pentobarbital injection). The people I trained were not specially hired to participate in the program, but were the regular kennel people on the premises. The program was very simple, requiring approximately 4 hours of work with each person. They quickly learned how to inject a vein on the larger animals and how to introduce the material intraperitoneally on the smaller ones. They are all doing a beautiful job and in most cases have as a result of doing so many, become more adept than their teacher..."

Walter E. Kilroy, then Director of Operations and now Vice President, Massachusetts Society for the Prevention of Cruelty to Animals, testimony before Fort Wayne, Indiana, City Council, May, 1977:

"MSPCA shelters receive...69,000-85,000 stray and unwanted animals annually. Of this number, some 50,000-70,000 must be destroyed due to advanced age, poor health, undesirable temperament, or simply the lack of suitable homes.

"The method of animal euthanasia which we have used exclusively for more than 30 years is the injection of sodium pentobarbital or its derivatives. There is absolutely no question in our mind that it is the most humane method available today. Additionally, it is an efficient, practical and inexpensive method -- applicable to either small or large numbers of animals, be they stray, unwanted or a combination of both."

Sonoma County, California, Grand Jury report of June, 1978:

"...the injection of sodium pentobarbital is no more expensive and possibly less expensive than the use of the decompression chambers."

Dr. Edwin A. Beckcom, Jr., of Dallas, Texas, report on the city's change from decompression to sodium pentobarbital injection:

"Our experience in Dallas during the past eight months has shown that it is practical to euthanize large numbers of small pet animals by the injection of barbiturates."

6) Alternative methods of euthanasia are more beneficial for the employees involved than decompression.

The safety and well-being of the shelter employees who perform euthanasia is critically important to the selection of a euthanasia method.

Philip Anthony, Orange Co., California, supervisor, stated in his report on the use of the decompression chamber:

> "...I must now add my impression of the attitudes of the personnel at our Animal Shelter involved with the decompression chamber method versus those at the Los Angeles County Shelter involved with their injection method. The staff members at our shelter were at best protective of their decompression method. And, it showed as they carted the animals up, loaded them into the chamber, threw the switch, then hauled the animals out and cleaned up the mess afterwards. It was like they knew what was happening, but could keep it at an impersonal distance by virtue of the mechanical operation of the chamber. They did not have to look into the chamber -- and apparently they never did, even though some authorities say they should...
>
> "In contrast, the injection method team was very close to each animal as it quietly and cleanly expired. But, they appeared calmly confident in what they were doing, and openly stated they believed their work to be the best way to carry out an unavoidable task. I went away from the two experiences firmly convinced that the injection team felt much better about the correctness and the humane value of their work than did the decompression chamber operators...
>
> "Both the public and the humane organizations have stressed to me that public cooperation with our Animal Shelter could be greatly improved if the decompression chamber were not in use. Not only would more homeless and unwanted animals be brought to our shelter, but significantly more volunteer help would become available in all areas..."

Clearly, using the decompression chamber does not make the difficult task of destroying shelter animals any easier for the employees assigned to this duty. In fact, the impersonal nature of the decompression chamber can contribute to callousness on the part of the employees which in turn can cause even more mishandling and negligence during the euthanasia process.

CONCLUSION

The material in the previous pages clearly shows that high altitude decompression is not a humane method of animal euthanasia. Support for its use is in fact diminishing as it is outlawed in more and more locations and many shelters voluntarily discontinue its use.

Following is a statement made in June, 1979, by Martin Passaglia, Executive Director of the American Humane Association, which has been identified as a consistent proponent of decompression for animal euthanasia:

> "The American Humane Association's current position is consistent with the determinations of the Euthanasia Review Panel of the American Veterinary Medical Association, July, 1978. Accordingly we do not endorse nor stridently support any single method in preference to any other method that has been selected as long as that selected method has been determined to be humane by the Euthanasia Review Panel."

The AVMA statement Passaglia referred to says:

> "Rapid decompression is a satisfactory procedure for euthanasia, provided the equipment is properly constructed, correctly maintained, and proficiently operated. Because many difficulties have arisen in using decompression and because there is a general lack of understanding of how hypoxia affects animals, other methods of euthanasia are preferable."

Animal euthanasia by decompression cannot in reality be humanely conducted by animal shelters and pounds. Because there are humane and practical alternatives available that compare favorably in cost, The Humane Society of the United States urges that animal euthanasia by decompression be outlawed.

APPENDIX

Proper Procedures and Standards for Operating a High-Altitude (Low-Pressure) Unit

1. Visually inspect the unit for:

   a. light bulb status in each unit
   b. hair in exit port
   c. condition of door gaskets
   d. fit and level of door hanging (door adjustment may be accomplished by loosening allen screws on hinges)
   e. presence of checks or visible cracks in viewport in doors
   f. sanitary condition of units inside and outside
   g. level of oil in compressor (20-40 all weight level oil)
   h. frequency of oil change
   i. completeness of maintenance check list
   j. electric block heater in areas where weather requires
   k. record of last compressor overhaul

2. Request chief operator to activate unit.

   a. Determine altitude of cut-off, cut-on action of mercury switch.
   b. Observe solenoid switch action altitudes.
   c. Attain 55,000 altitude within 45-60 seconds? (yes-no)

3. Loading procedure:

   a. No animals will be stored in basket longer than 10 minutes prior to euthanization.
   b. When more than one animal is to be euthanized at the same time, sound judgement must be used and consideration must be given to the size, sex and temperament of the animals.

4. Number of animals to be euthanized at one time.

   a. LM model, no more than:

      1) one St. Bernard type dog
      2) two German shepherd type dogs
      3) three cocker-beagle type dogs
      4) six small breed dogs
      5) individual containers of puppies and kittens with eyes open may be placed in a unit at the same time.

6) the number of puppies in free-roaming state --
   a) use humane judgement
7) the number of cats and kittens in free-roaming state --
   a) use humane judgement

b. MU model, no more than:

1) one St. Bernard type dog
2) one German shepherd type dog
3) three cocker-beagle type dogs
4) four small breed dogs

c. SU model, no more than:

1) one German shepherd type dog
2) two cocker-beagle type dogs
3) three small breed dogs

NOTE: Newborn Animals should never be placed into unit until the eyes are open. Reptiles and Amphibians should never be placed into the unit. DO NOT put adult dogs and cats in unit at same time.

An alternate to the principle method of euthanasia should be available for newborns (without eyes open), reptiles, amphibians and as an emergency measure.

5. Unloading procedure

a. Check each animal for signs of life before disposing of body; i.e., absence of heart beat (check with fingers or stethoscope), dull, cloudy appearance of eyeball, fully dilated pupil, absence of breathing and no wink reflex (touch corner of eyelid).

6. Clean unit and basket after each run.

7. Maintenance

Routine maintenance and inspection of compressor should be done following 2,000 runs, "starts" or annually, whichever comes first. If malfunctions are noted, i.e. extended time to reach altitude, altitude loss to lower than 45,000 feet within 10-minutes, etc., inspection should be accomplished immediately.

8. Trouble shooting hints for a unit that does not reach 55,000 in 45-60 seconds:

a. Recheck door gasket for breaks, rough spots, etc.
b. Recheck door alignment.
c. Rust along edges of doors, especially at bottom.
d. Check joints for leaks (KY jelly).
e. Check valves for tightness.
f. Muffler, heavily rusted or filled with oil and dirt may cause a back pressure.
g. Check for hair in exhaust pipe inside unit.
h. Check hose between pump and unit for cracks.

THE AMERICAN HUMANE ASSOCIATION

INSPECTION REPORT

HIGH ALTITUDE EUTHANASIA

Name of Agency _____

Address _____ Telephone _____

City _____ State _____ Zip _____

Name of Executive _____ Title _____

Equipment Manufacturer _____

Define the following as: (O) Operating, (N/O) Not Operating, (N/A) Not Applicable, (Y) Yes, (N) No, (S) Satisfactory, (U) Unsatisfactory, where applicable.

UNIT
Model _____
Model No. _____
Mercury Switch _____
Vacuum Gauge _____
Door Gasket _____
View Port _____
Interior Light _____
Door Hinges _____
Door Spring Lock _____
Sanitation _____

UNIT (parasite)
Vacuum Gauge _____
Door Gasket _____
View Port _____
Interior Light _____
Door Hinges _____
Door Spring Lock _____
Sanitation _____

CAGE & DOLLY
How many _____
Sanitation _____
Maintenance _____

TIMER
Is it used _____
Always _____

VACUUM PUMP
Electric Motor Size _____
Pump Size _____
Protected from weather _____
Protected from extreme temp. _____
Oil checked _____
Oil changed _____ Date _____
Valves cleaned _____ Date _____
Seals checked _____ Date _____
Belts (Condition _____

CONTROL VALVES
Color coded _____
Leak free _____
Used properly _____

EUTHANASIA ROOM
Sanitation _____
Maintenance _____

Instructions for operation are posted ____
Extra chamber door gasket on hand ____
Gasket changed how often _____

Note additional equipment: _____

TECHNICAL DATA:

Before Adjustment	Following Adjustment
Seconds to automatic shutdown _____	Seconds to automatic shutdown _____
Seconds to recommended altitude _____	Seconds to recommended altitude _____
Operating altitude _____	Operating altitude _____
Chamber gauge reading at shutdown _____	Chamber gauge reading at shutdown _____
Altimeter reading at shutdown (altitude) _____	Altimeter reading at shutdown (altitude) _____
Altimeter reading after 10 minutes _____	Altimeter reading after 10 minutes _____

Adjustments Made By Inspector:

Training Program For Operating Personnel (Explain):

Operating Procedure Checked Regularly by _____ How Often _____

Recommendations: (continue on back)

Date _____ Certified _____ Inspector _____
Not Certified _____

** ORGANIZATIONS THAT HAVE STOPPED USING THE HIGH ALTITUDE DECOMPRESSION CHAMBER FOR ANIMAL EUTHANASIA:

The American Society for the
Prevention of Cruelty to Animals
441 E. 92nd Street
New York, New York 10028

The Humane Society of Pomona Valley
500 Humane Way
Pomona, California 91766
(prior to passage of state law)

Indianapolis Humane Society
7929 N. Michigan Avenue
Indianapolis, Indiana 46268

Prince George's County Animal Shelter
8311 D'Arcy Road
Forestville, Maryland 20028
(1963)

Washington Animal Rescue League
71 Oglethorpe Street, N.W.
Washington, DC 20001
(1960)

The Anti-Cruelty Society
Animal Care Shelter
157 West Grand Avenue
Chicago, Illinois 60610

Peninsula Humane Society
12 Airport Boulevard
San Mateo, California 94401
(prior to passage of state law)

Ft. Wayne Humane Shelter
2225 Dwenger Avenue
Ft. Wayne, Indiana 46803
(1977 - second city by law)

Baltimore City Animal Shelter
222 N. Calverton Road
Baltimore, Maryland 21223
(prior to passage of state law)

Humane Society of Santa Clara Valley
2530 Lafayette Street
Santa Clara, California 95050
(prior to passage of state law)

Los Angeles County Department of
Animal Control
11258 S. Garfield Avenue
Downey, California 90242
(prior to passage of state law)

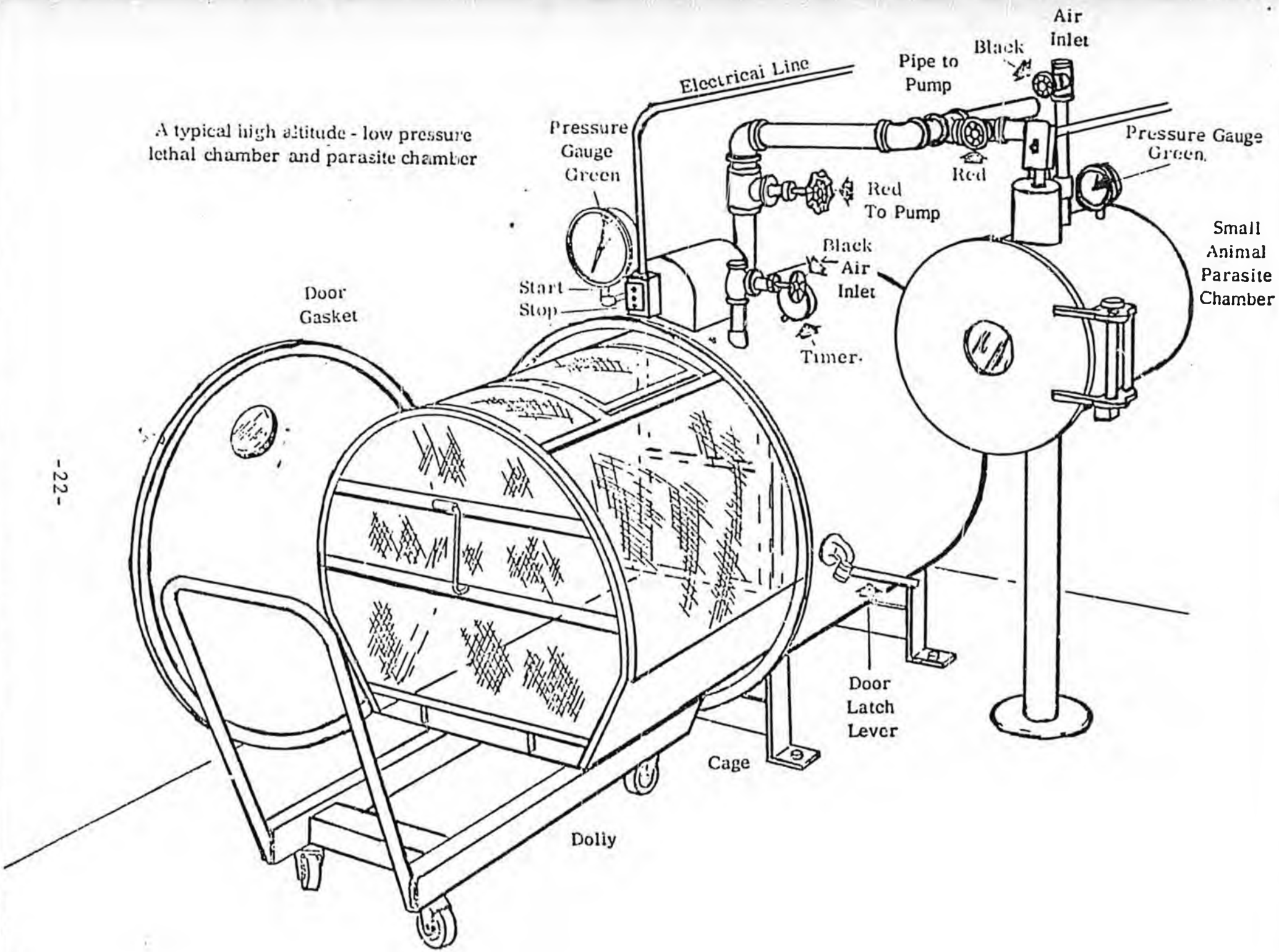
Environmental Health and Conservation
Department
City of Dallas
1500 W. Mockingbird Lane
Dallas, Texas 75235
(1973 - first city by law)

Wisconsin Humane Society
4151 N. Humboldt Avenue
Milwaukee, Wisconsin 53212

Warren County Dog Pound
Route 42
Lebanon, Ohio 45936

** NOT A COMPREHENSIVE LIST

A typical high altitude - low pressure lethal chamber and parasite chamber



SOURCES

"Study of Euthanasia Methods for Urban Animal Control Programs -- Attachment to Interim Report and Recommendations Concerning the Animal Control Unit of the Oakland Police Department," prepared by Joyce A. Tischler, Association for Responsible Animal Guardianship, Oakland, California, April, 1978

"Euthanasia of Dogs and Cats: An Analysis of Experience and Current Knowledge With Recommendations for Research," The Institute for the Study of Animal Problems, August, 1978

Corrected Copy Report, Informal Conference, High Altitude (Low Pressure) Animal Euthanasia, Thursday, May 21, 1964, Brooks Air Force Base, San Antonio, Texas, American Humane Association

Letter from Dr. George P. Biro, Assistant Professor, Department of Physiology, Faculty of Medicine, University of Ottawa, July 5, 1973

Testimony before Subcommittee of Agricultural and Natural Resources Committee, House of Representatives, State of South Carolina, December 6-7, 1977

Report by Supervisor Philip L. Anthony to Board of Supervisors of Orange County, California, May 2, 1978

Report from Sonoma County Grand Jury inquiry into the use of decompression chambers in the county

Report from Gary D. Baumann, DVM, Mesa, Arizona, to Arizona legislature

SOURCES Continued

Report of the AVMA Panel on Euthanasia, American Veterinary Medical Association, 1978

Report, Second Conference, High Altitude (Low Pressure) Animal Euthanasia, October 24, 1964, Los Angeles, California, American Humane Association

Veterinary Position Paper: "The High Altitude Decompression Chamber vs. Sodium Pentobarbital Injection," John W. Oliver, DVM, Saratoga, California

Testimony by Walter E. Kilroy, Vice President, Massachusetts Society for the Prevention of Cruelty to Animals, before the City Council of Fort Wayne, Indiana, May, 1977

"Euthanasia by Injection," Edwin A. Beckcom, Jr., DVM, October, 1975

Statement by Martin Passaglia, Executive Director, American Humane Association, to Southeastern Animal Control Association Seminar, June 1979

P.O. Box 187
Colorado Springs, CO. 80901
(303) 473-1741

States Outlawing Use of Pressure Chamber

As of 4-15-81

Alaska EFF. 5/80
Arizona

Arkansas

California

[redacted]

Connecticut

Idaho

Kansas
Maine
Maryland

Massachusetts

Michigan

Nevada

New York

Ohio

South Carolina

Tennessee

Virginia
Wyoming

States Allowing DEA Licensing Direct to Humane Society for use of Sod. Pentobarb.

As of 4-15-81

Colorado

Florida

Indiana

Maine

Maryland

Michigan

New Jersey

[redacted] DID NOT PASS

Utah

Virginia

Wisconsin

Washington
TEXAS EFF 9/1/81

North American Pharmacal 1-800-521-4686

NORTH AMERICAN PHARMACAL

CHARLES J. SCHULTHEIS 6851 CHASE ROAD

EAST ANCHORAGE VETERINARY HOSPITAL
2639 BONIFACE PKWY.
ANCHORAGE, ALASKA 99504

TELEPHONE 337-1561

December 17, 1979

Joyce Munson
935 East 79th
Anchorage, Ak. 99502

Dear Ms. Munson;

I'm writing to give my support to the Alaska Humane Society and Alaska CARE in their efforts to introduce legislation to stop the use of the high altitude decompresson chamber in Alaska.

I've been acquainted with the use of the high altitude chamber used, by the ASPCA for several years. I consider it to have many disadvantages which make it an inhumane method to use on many animals such as very young animals or those suffering from respiratory disease (a very common problem at our animal control facility).

I do not see that this legislation would put a hardship on any Alaskan city as the Anchorage Municipality will discontinue the use of its machine in January. Fairbanks doesn't use their machine and as far as I know, no other city has such a machine. More humane and economical methods of euthanasia exist and are easily adaptable.

One problem that needs to be clarified in the statutes is the legality of lay persons administering sodium pentabarbital or other IV (intraveneous) euthanasia solutions without the presence of a veterinarian. There is no mention of this in the present veterinary 08 statutes. Another reason to update our archaic veterinary practice Act!

I hope you will consider sponsoring legislation to prohibit the use of the high altitude decompression chamber in Alaska.

Yours,

Jon Thomas, DVM

Jon Thomas, DVM

Joyce, I also sent similar letters to Barnes, Sturgulewski.

Jon

November 28, 1979

Arliss Sturgulewski
Alaska State Senate
Pouch V
Juneau, Alaska 99811

Dear Arliss:

I am writing to encourage you to sponser a Bill on Animal Welfare. In particular one that will ban use of the High-Altitude Decompression Chamber (Euthanasia). I know you have received literature and other letters concerning the use of this inhumane machine. I will limit this letter to my own first hand knowledge.

Fairbanks had a private animal shelter some ten years ago. My husband and I did volunteer work there for eight months. Conditions were most deplorable due to lack of funds, lack of veterinary treatment and poor help. However a new euthanasia was set up. It was in perfect working order and inspected by a member of the American Humane Society -- demonstrated and passed as the way to kill the shelters animals. I kept away from the death room for many weeks, even though I received reports constantly that the animals suffered. Finally, after finding one person who did not care for cats, was putting two or three cats into cardboard boxes (together in one box), then putting the box into the machine. You can imagine the horror as the cats fought, bit and struggled. When pockets of air are formed by overcrowding or such as would be trapped by a box, the death was much longer and terribly traumatic. At this time my husband and I took over the job of killing the cats and one dog. We left the light on in the machine to see what happened. The cats would first come to the window wanting out, then they would start turning in circles, then slash the air, tongues would hang out, eyes bug, finally they'd lie down, vomit and excrete and not move again. The one dog we put in was a large injured German shepard. He turned around and around, foaming at the mouth, the torture was indescribable. I have not made mention of the very foul odor and mess left to clean up. My eyes are full of tears as I recall what we did to these animals . . . and its been ten years.

This machine provides no gradual pressure change and gentle falling into unconsciousness as the ads would have one to believe. It's a fast pressure change and no matter how well the machine works--its cruel - - very cruel. Fairbanks' machine was left nearly 10 years ago, locked in a shed not to be used again.

We strongly recommend the humane sodium pentobarbitol. I also understand that if the animals are first given a tranquilizer so they are unconscious then an injection of T61 is considered humane; but only after a tranquilizer.

I sincerely hope a bill will be sponsored to stop the use of this machine in Alaska.

Sincerely,

Arleen Darling

Arleen Darling
Pet Pride
Executive Field Director of Alaska
P.O. Box 229
Fairbanks, Alaska 99707
907 456-7198

15113 SUNSET BOULEVARD
PACIFIC PALISADES, CA. 90272
213 / 459-1703

June 9, 1977

Dear Friend of Cats:

We at Pet Pride find shocking the persistence of the American Humane Association in using ads such as the enclosed promoting the euthanair machine as "modern, painless, quick, humane and one hundred percent efficient for small animal destruction" in their publication.

Barbara Schieven, Seal of Approval Member in Maine, reports the following:

> "I watched a puppy and a kitten placed in the chamber. The machine was turned on sucking the air from the chamber and sending the animals around in circles. They huddled together in terror, screaming, struggling, urinating and defecating on themselves and gnashing their tongues to a pulp. We were informed that puppies and kittens too small to be weaned have to be run through the decompression chamber three to five times before they die."

The balance of Barbara's report on animals both small and large is so spine-chilling we find it hard to repeat.

Ruth Weddle, President of the California Coalition of Animal Owners reports:

> "Inspection records of the California Agency in charge of checking the decompression chambers for proper operation have shown that more than half the machines in use (60%) were faulty in the recent inspection year! Many animals, especially the sick, the old and those with respiratory problems suffer especial pain as their lungs explode under pressure in this procedure."

Phyllis Wright in a Dallas Report states (Humane Society of the United States)

> "I object strenuously to the information on the back of the euthanair brochure where it says a device 33" wide, 42" long can handle up to 50 animals an hour! Now mathematics is not my strongest suit, but it is easy for me to figure that in a chamber that size, one German Shepherd would fit. Four Beagles would fit. Loading the machine takes at least two minutes. If the machine has been unloaded and cleared of vomit and urine and feces, that takes another five minutes. Even if the machine is working properly, how can 50 animals be killed 'humanely' every hour?

There is more, but perhaps you have already heard enough. Will you please rush a letter to the editor of the American Humane Association Magazine and urge that ads for euthanair machines be discontinued in their publication? A few sample letters are enclosed. Use them as the basis for your complaint. We know we can count on you as you have helped us with important issues in the past.

We feel that it is truly ironical that the oldest humane society in these United States should continue as it has for 18 years to advertise the Euthanair Machine in the face of the vast amount of evidence that it is the most cruel of euthanasia methods and causes the most suffering among dogs and cats.

If you will address your letter to the following and then return the card indicating that you have written I would deeply appreciate it. It would be one more step toward the complete disuse of this machine.

Sincerely yours,

Celia Heriot
President of Pet Pride

Address your letter to:

Mr. Milton Searle, Executive Director
of the American Humane Association,
American Humane Magazine
5351 Roslyn Street
Englewood, Colorado 80110

Some Sample Letters

Dear Mr. Searle:

I am horrified by your inclusion in your magazine of an ad on the Euthanair machine promoting it as "quick, painless and humane." There is more than sufficient evidence to prove that this is totally false and we urge that as an "humane" organization, you discontinue these ads.

Dear Mr. Searle:

I am shocked that you would include in your publication an ad promoting the euthanair machine as humane, quick and one hundred percent efficient. According to Ruth Weddle, President of the California Coalition of Animals, over 60% of these machines used in California were proved faulty! In the name of humanity how can you continue for years to promote the machine in the same misleading way? Please, at least discontinue its advertising until we succeed in outlawing it. It is just a matter of time as it is with the leg hold trap!

Dear Mr. Searle:

Numerous other humane organizations are against the use of the euthanair machine. At present the U.S. Dept. of the Air Force disclaims any endorsement of the Euthanair Chamber and additionally states in letters that CCAO have on file that they do not consider its use as a humane method for the killing of dogs and cats.

All we ask now is your cooperation in asking your Editor to cancel the ad.

Dear Mr. Searle:

There are so many good things written in your magazine it seems a shame to spoil it with that tricky, misleading ad. It has been rumored about that you make a profit on the machine and that a former president of AHA formed the Corporation which brought it into being and that you have been doing business for 18 years.

Think how many suffering cats, billions - have spent their last moments in this agonizing manner!

PLEASE GET YOUR LETTERS OFF TODAY. And return the card.

Journal

Report of the AVMA Panel on Euthanasia

Prepared by the American Veterinary Medical Association Panel on Euthanasia, at the request of the AVMA Council on Research.

Supported by grants from the AVMA Foundation and the American Animal Hospital Association La Croix Lecture Fund.

devices have been used for dogs and cats, closed wooden cabinets with separated front and metal floor sections serving as electrodes, or with a metal floor plus a metal collar and chain serving as electrodes.

Experiments in dogs have shown the necessity of directing the electrical current through the brain in order to produce instant stunning with loss of consciousness. In the dog, when the electricity passes between front and rear limbs or neck and feet, it causes the heart to fibrillate promptly but does not produce unconsciousness by action on the brain. The animal does not lose consciousness until affected by cerebral anoxia which occurs a minimum of 12 seconds after cardiac fibrillation is induced by the electrical shock. These data dictate against use of the older-style euthanasia cabinets that direct current through the heart and not directly through the brain. An apparatus which applies electrodes to opposite sides of the head, or in another way directs electrical current immediately through the brain, is necessary to induce unconsciousness instantly. This effect should be followed promptly by electrically induced fibrillation of the heart.

Disadvantages—(1) Electrocution is not a useful method for mass euthanasia because so much time is required with each animal; (2) it is not a useful method for a vicious, intractable animal; (3) violent extension and stiffening of the legs, head, and neck occur; (4) electrocution is esthetically objectionable; (5) in small animals, electrocution may not result in death because ventricular fibrillation and circulatory collapse do not always persist after cessation of current flow; and (6) it is hazardous to personnel.

Recommendations—Electrocution is humane only if special skills and equipment are employed to assure passage of sufficient current through the brain to produce unconsciousness followed by electrically induced fibrillation of the heart.

Gunshot and Captive-Bolt Pistol—Under some circumstances, gunshot may be the only practical method of euthanasia. It should be performed by a trained marksman utilizing a rifle or pistol appropriate for the situation. The projectile should be accurately placed to enter the brain, causing instant unconsciousness.[1,10]

The captive-bolt pistol is more appropriate when there is effective restraint of the animal.[1] This pistol utilizes a blank cartridge as propellant, and when applied to the forehead fires a bolt through the skull, penetrating the brain. Since the bolt remains attached to the gun, the hazard of ricochet is eliminated.

Advantages—(1) Euthanasia is instant; and (2) under field conditions, gunshot may be the only effective method available.

Disadvantages—(1) It is dangerous to personnel; (2) it is esthetically unpleasant; (3) under field conditions it may be difficult to hit the brain; and (4) the method is not suitable where brain examination must be conducted after death.

Recommendations—Use of a captive-bolt pistol in restrained animals is recommended. Where restraint cannot be effectively accomplished, gunshot is an acceptable method of euthanasia.

[redacted]—Brain function and consciousness are highly dependent on an adequate oxygen (O_2) supply. Hypoxia is a deficiency of O_2 available to the tissues.[70,71] Aircraft pilots flying at high altitude and exposed to a low O_2 environment frequently experience euphoria, followed by depression of the CNS. Hypoxia may be so acute that loss of consciousness occurs rapidly without any prior warning.[13,14] Unconsciousness occurs within 10 seconds in dogs exposed to simulated pressure altitudes between 50,000 and 55,000 feet (equivalent to 68.8 mm of Hg), whether breathing air or 100% oxygen.[7] Properly designed and maintained chambers operate at these pressures.

The relationships among unconsciousness, absence of pain, and involuntary muscular activity have been reviewed earlier in this report. Humane (the animal) and esthetic (the observer) considerations are often in conflict. Bancroft and Dunn[3] listed some of the body responses during decompression after loss of consciousness and pain perception, as follows. Respirations become deep and rapid for several seconds. Marked abdominal distention occurs immediately, due to expansion of gases present in the gastrointestinal tract. The animal collapses in about 8 seconds. Mild convulsions generally occur in 10 to 12 seconds and last for several seconds. Decerebrate rigidity also may occur.[24] Following a convulsive seizure, the animal is quiescent except for occasional respiratory gasps. Usually lacrimation, salivation, and urination occur. Intravascular gas bubbles are not produced at 55,000 feet or below.[30]

The literature on rapid decompression as a means of producing hypoxia and its use in euthanasia was reviewed by Booth.[7] Although there are differences of opinion, evidence supported by EEG recordings indicates that hypoxia rapidly induces unconsciousness in both animals and human beings subjected to high altitude simulated by the use of decompression chambers.

Advantages—(1) Personnel safety; and (2) when properly used, decompression euthanasia is efficient and humane.

Disadvantages—Some cities and states have passed legislation banning the use of decompression euthanasia. The method has fallen into disrepute because of: (1) improper design, operation, maintenance, and functioning of equipment; (2) accidental recompression with recovery of the animal followed again by decompression before death occurred; (3) bloating, bleeding, vomiting, convulsions, urination, and defecation in the unconscious animal which are esthetically unpleasant; (4) possible overcrowding of the chamber; (5) the increased tolerance of immature animals (under 4 months old) to hypoxia and the long periods of decompression required before respiration ceases; (6) respiratory or middle ear infections, or both, that may cause pain from unequalized pressure; and (7) failure to understand the mechanisms of action of hypoxia and its effects on animals.

KETCHIKAN GATEWAY BOROUGH
344 FRONT STREET
KETCHIKAN, ALASKA 99901

March 8, 1983

The Honorable Joe Josepheson
Senate, State of Alaska
Pouch V
Juneau, Alaska 99811

Dear Senator:

Enclosed is some information we gathered on the decompression chamber (not rapid). We have contacted Dr. Richard Ott of Washington State University who would be willing to testify in favor of the chamber as a humane method of euthanasia.

Our response to Dr. Wilson is that we believe in "community" preference rather than State mandates. It may be later the Ketchikan citizens would decide to find alternatives.

Sincerely,

KETCHIKAN GATEWAY BOROUGH

Marvin Yoder
Borough Manager

MLY:jw

enclosures

cc: Dr. Rodman Wilson

Sen. Josephson FOR YOUR INFORMATION 12-20-82 PACKET

high-altitude low-pressure verified humane

AHA Reevaluates Euthanasia Method

By ROBT. L. HUMMER, VMD, MPH

The high-altitude low-pressure method of euthanasia was orginially proposed on the basis of the scientific knowledge gained by respiratory physiologists, etc., concerned with the safety of aircraft pilots. Early studies showed that brain cells are the most susceptible of all the cells of the body to a reduced oxygen supply. On this basis it was postulated that reducing the supply of oxygen, by lowering the pressure within a closed container, would be a humane and practical method of killing the millions of animals that must be disposed of by humane societies and municipal animal shelters throughout the United States.

This method of euthanasia has been endorsed by The American Humane Association for more than a decade. AHA has done so with complete confidence that this method is, in fact, a "most humane euthanatizing process." But even with this assurance by AHA, and supported by numerous scientists, not infrequently some misinformed persons continue to insist that the animals killed by this method experience excruciating pain.

As a result of several experiences recently wherein this method has been challenged in courts of law, AHA felt honor-bound to reevaluate the method. This decision was made with two specific objectives: to obtain the best scientific information possible so as to confirm or refute the original position espoused by AHA; and to obtain scientific data to answer each allegation regarding the cruel aspects of this euthanatizing process.

The reevaluation study was performed at the College of Veterinary Medicine, Colorado State University, Fort Collins. The scientists conducting these studies were eminently qualified to evaluate the body reactions experienced by dogs and cats when in a high-altitude low-pressure cabinet.

Some of the claims proffered by those opposed to this method, and which were given special attention in this reevaluation study, are:

a. The eyeballs are forced from their sockets.
b. The eardrums are ruptured causing severe pain and hemorrhage.
c. Bloating occurs to the extent that the skin either bursts or is stretched as tight as a drum head.
d. The lungs are sucked from the chest.
e. The brain is exploded.
f. Animals with distemper, pneumonia, etc., suffer severe chest pains.

The AHA/CSU study proved conclusively that none of the above charges were factual. This statement is based on the observation of 102 dogs and 76 cats included in this study. It is of interest to note that of these animals, 38 dogs and 21 cats showed positive evidence of pneumonia. Furthermore, comparison of the data derived from these sick animals with that obtained from the other apparently healthy animals showed no substantial variations.

As a follow-up to the laboratory study and evaluation of this method, a field study was conducted. This latter study took place under typical animal shelter conditions at the Humane Society for Larimer County in Fort Collins. A commercially available Euthanair chamber was used.

The field study began September 1, 1975, and as of October 23, 1975, 290 dogs, 276 cats and five guinea pigs had been euthanatized.

The decompression method proved 100% effective in this field study. The shelter personnel who operated the equipment stated there were no problems with the method's effectiveness and reported no observations of the animals' reactions and responses which could indicate inhumane treatment.

Because of the scientific sophistication of this study, it was possible to establish the point, in time, when the animals lost consciousness. The electroencephalogram (EEG) and other physiological parameters of 17 dogs and seven cats indicated that unconsciousness occurred on an average of 52.5 seconds, with a range of 42-61 seconds, and 49.3 seconds, with a range of 43-59 seconds, respectively.

Additionally, it was determined that when unconsciousness occurred, the animals would fall. Thus, by relating the EEG onset of unconsciousness to the act of falling, it was shown that 73 dogs and 69 cats lost consciousness in an average of 51.8 seconds and 51 seconds respectively. This scientific observation should relieve the anxiety of many humanitarians, who previously had interpreted the muscle twitching and paddling movements seen in some animals immediately after they dropped, as being evidence of severe pain.

The actual cause of death by the high-altitude

low-pressure method is an oxygen deficit. The AHA/CSU study demonstrated conclusively that an inadequate amount of oxygen to sustain life was available in the cabinet after the recommended simulated altitude (pressure) was reached. This was determined by measuring the arterial blood-oxygen tension. (Po_2).

It must be emphasized that the ratio of oxygen to the other gases (primarily nitrogen) in the air is almost identical at sea level and at the altitude of 55,000 ft. Furthermore, it is the extreme reduction of the normal atmospheric pressure in the air at any altitude, as well as in the cabinet, that influences the amount of oxygen that is forced into the blood vessels (capillaries) within the air sacks of the lungs. Consequently, unconsciousness and death follow as a result of an insufficient amount of oxygen.

In addition to the above, another measurement was made to assure that death actually did occur in this environment.

In the 29 dogs used to determine the oxygen tension, it was noted that 0 blood pressure was confirmed an average of 5 minutes, 42 seconds (range 3 minutes, 55 seconds–6 minutes, 25 seconds) from the beginning of decompression.

All the above data was derived while the equipment was operated at a simulated altitude of 47,000 feet. While this altitude has been shown to be an effective *minimum* level to produce euthanasia *under closely controlled laboratory conditions*–it is the consensus of the AHA staff that from a practical point of view the 55,000 feet simulated altitude level is to be preferred. AHA and others will continue to use this altitude in all literature. This opinion is predicated on AHA's sincere desire to assure all concerned that the animals are killed in a humane manner. This decision is based on the findings of inspections of many shelters which indicated that improperly maintained equipment combined with shortcuts by the operator strongly mitigate in favor of higher operating altitudes.

We may also use the experience of the human animal–man–who is the best experimental subject because he can relate his experiences.

Numerous humans subjected to hypoxic conditions report that, "from the beginning of the decompression process to the onset of unconsciousness is a euphoric period." According to experiences by many pilots and scientists, there has never been a report of pain during the hypoxia experience despite the fact involuntary muscular contractions and twitching occur as the individual loses consciousness.

Unlike asphyxiation from choking, breath holding or drowning–where carbon dioxide builds up throughout the body and air cannot be moved by the respiratory system, the sensation of suffocation is absent in a low-pressure environment such as exists in the high-altitude low-pressure euthanasia cabinet. In the latter situation, breathing continues unimpeded and carbon dioxide actually decreases until loss of consciousness occurs. Extrapolating from the human reports, there is no evidence to indicate that animals are affected differently under similar conditions. This extrapolation is supported by the EEG findings mentioned above.

In summary, it was the consensus of the investigators of the AHA/CSU study that death by this method of euthanasia results from hypoxia and that it is humane.

Robt. L. Hummer, VMD, MPH, is veterinary consultant to The American Humane Association.

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P. O. Box 1266, Denver, Colo. 80201

How Much Do You

Know About

High Altitude Euthanasia

By COMMANDER MARTIN PASSAGLIA

● High altitude euthanasia is utilized by many humane organizations faced with the destruction of large numbers of animals.

Although this method of euthanasia has proven to be efficient and economical in operation, it frequently comes under criticism by those who do not understand its principles.

● Commander Passaglia is attached to the Medical Service Corps, U. S. Navy. He holds degrees in zoology, comparative physiology and human physiology. He is one of the most prominent aviation physiologists in the military. He has gained prominence through his special studies of the effects of high altitude euthanasia.

Commander Passaglia is a member of the board of directors of the San Diego County Humane Society and SPCA. Questions concerning high altitude euthanasia should be addressed directly to The American Humane Association.

The word "euthanasia" comes from the Greek *eu* which means *good*, and *thanatos* which is translated as *death*. The literal translation, therefore, is good or happy death.

In animal welfare, euthanasia refers to the painless destruction of suffering animals. The public accepts it as morally right and legal under certain, well-defined conditions.

To effect humane euthanasia for animals, there are a number of methods which one can utilize for this procedure. All are quite painless and are limited solely by the number of animals to be destroyed or other situational conditions. One of the best mechanical methods is the high altitude, low pressure method.

By way of a brief history of high altitude physiology, let me recount a few of the more classical situations I have extracted from literature.

In 1608, the Jesuit priest Acosta, while accompanying Pizzara across the Andes, first documented the terrible affliction which struck men and animals in the lofty heights. Acosta expounded at great length about this problem which he referred to as "mountain sickness"—a name which was used for centuries.

In 1862, the Englishmen Glaisher and Coxwell published a description of "balloon sickness" following their flight to 29,000 feet. In their account they noted a loss of accurate vision and hearing, and a paralysis of the arms and legs. Prior to unconsciousness, Coxwell managed to

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seize the valve rope with his teeth and, therefore, was able to effect a descent.

Paul Bert, the great French physiologist, in 1875 built a low pressure chamber and demonstrated that oxygen lack during an ascent was the direct result of reduced barometric pressure.

That same year, three of Bert's associates, Tissandier, Sival and Croce-Spenelli, ascended by balloon to 29,000 feet—but only one man lived to tell about it. Tessandier, the survivor, wrote:

"I now come to the fateful moments when we were overcome by the terrific action of reduced pressure at 23,000 feet. A torpor has seized me. I write, nevertheless, though I have *no clear recollection* of writing. We are rising, Croce is *panting*. Sival shuts his eyes—Croce also shuts his eyes. At 24,000 the condition of torpor that overcomes one is extraordinary. Mind and body become feebler. There is no suffering. On the contrary, one feels *inward joy. There is no thought of the dangerous position;* one rises and one is glad to be rising. I soon felt myself so weak that I could not even turn my head to look at my companions. I wished to call out that we were 26,000 feet, but my *tongue was paralyzed.* All at once I fell down powerless and lost all further memory."

The balloon rose to 29,000 feet, then began to descend of its own accord. At 15,000 feet, Tissandier regained consciousness and tossed the sandbags over the side. This is a singularly pointed demonstration of his lack of judgment. Obviously, the balloon began rerising. Tessandier slumped back into unconsciousness and fortunately, for him at least, the balloon descended of its own accord. He was the only one alive!

I can move quickly to modern day and point out another name with which you are all very, very familiar—that of Charles Lindbergh. Lindbergh writes: "Learn to recognize hypoxia quickly; then you have time to do something about it before you lose consciousness."

His experiences prove again that *time* is a very, very important factor in high-altitude work!

In 1927 while flying the Spirit of St. Louis over the Rocky Mountains in Colorado he experienced, as he called it, an increasing vagueness of perception. A few years later, after extensive training at the Mayo Clinic in Minnesota, Charles Lindbergh determined he could expect approximately 15 seconds of reasonably clear consciousness following oxygen failure only if he discovered the oxygen failure immediately!

I have excerpts of Lindbergh's report about an experience he encountered in 1939 while flying an experimental aircraft for Lockheed. He lost his oxygen at 36,000 feet and although he knew he had no more than 15 seconds of useful, reasonably clear conscious time in which to effect a transfer from the aircraft oxygen to an emergency oxygen bottle, he didn't do it. Rather than switch to the emergency oxygen bottle, he elected to nose the aircraft over and to descend normally from 36,000 feet until he was out of the area of danger.

He says: "The dials in front of me faded; my mind became too dull to think of the emergency bottle system. From somewhere above 30,000 feet to somewhere below 20,000 feet, I remember only a great shriek outside my cockpit and my determination to increase the angle of dive regardless of consequences."

The P-47 almost certainly went through a compressability condition and that is a very, very high dynamic state where it was fortunate that the wings did not tear off. At about 17,000 feet, the aircraft was fully controllable again. With the increased density of air, he could again see the instrument dials and his senses regained their normalcy.

What then, in view of these two rather descriptive accounts, is the problem of hypoxia? How can we use it to our advantage?

In Greek, the word *hypoxia* means *an insufficient amount of oxygen.* There is a similar word which you may also see: *anoxia,* from the Greek, meaning *no oxygen.* There is a fine line between these two words which I will get into later.

At this time, however, I am going to be rather emphatic in pointing out that *there is no relationship between hypoxia and "asphyxia."* Please, let me emphasize that point: There is no relationship at all—physiologically or mechanically or any other way—between hypoxia and asphyxia.

In the condition of hypoxia, one reduces the pressure of the oxygen going into the lungs. In asphyxia, the body is mechanically deprived of oxygen and of the ability to remove carbon dioxide. This can be done in a number of ways. You can strangle a person; you can place a pillow over his face; you can enclose his head in a plastic sack. These are all forms of asphyxia. The lungs have been deprived of oxygen, and you have mechanically prevented the elimination of carbon dioxide, which must be done through the lungs.

Now, let's consider the relationship between an ascent to altitude and the reduction in barometric pressure that one observes in aviation.

As you go up in altitude, the barometric pressure is reduced! Barometric pressure—whether

you determine it in millimeters or inches of mercury, or whatever unit you use—is composed of the individual partial pressures of all the gases that make it up.

For example, we use the two major gases in the atmosphere, nitrogen and oxygen. The air is 80 percent nitrogen; therefore, the nitrogen pressure is 608 millimeters of mercury, or 80 percent of the total pressure. The oxygen percentage is 20; therefore, the total pressure of the oxygen pressure is 152 millimeters of mercury. This is what we are inhaling—152 millimeters of mercury of oxygen. And please remember—this figure represents a pressure, not a quantity or a volume. It is an oxygen pressure.

At sea level, we have approximately 100 millimeters of mercury of oxygen pressure in the lungs—that is, at the working level of the lung in the alveoli, where we have the exchange of gases, where the carbon dioxide is given off and the oxygen is picked up by the blood.

This 100 millimeters of mercury of oxygen at sea level produces a blood saturation (how much gas there is in the blood) of approximately 97 to 98 percent. This is the most that the blood can contain. When we make an ascent to 10,000 feet altitude, the amount of oxygen in the lung is reduced to 61 millimeters. If the amount of pressure pushing the oxygen into blood is reduced then, it's understood quite naturally that the amount of oxygen going into the blood is also reduced. The blood saturation at 10,000 feet is no longer 98 percent. It is approximately 89 percent. This is no longer normal! The higher we ascend, the less oxygen there is in the alveoli, the working place of the lung. We have, thus, reduced the amount of pressure pushing oxygen into the blood and have subsequently reduced the amount of oxygen in the blood.

If we ascend above 41,000 feet, even though we have oxygen to breathe, we become hypoxic. The first commandment of aviation is "as soon as you pass 10,000 feet you *must* wear an oxygen mask" and this is a rule every aviator knows. That is why an aviator will breathe 100 percent oxygen when he goes above 10,000 feet. But as soon as he passes 41,000 feet, even though he's breathing oxygen, he's in danger because he's not getting enough pressure in the lungs to sustain normal life.

Now, in order to provide him with an adequate amount of oxygen beyond 41,000 feet, we utilize what we call "positive pressure breathing." In other words, we are forcing oxygen under pressure into his lungs. This not only makes him inhale, but also inflates his lungs under pressure. Positive pressure breathing is used at any time an individual ascends beyond 35,000 feet.

Let me recapitulate! Beyond 10,000 feet the individual must be provided with oxygen in order to maintain a normal blood saturation. This condition of additional or supplemental oxygen is satisfactory to about 35,000 feet and, beyond 35,000 feet, in order to maintain normal blood saturation, he *must* be provided with positive pressure breathing, which is satisfactory to about 50,000 feet. As we ascend from sea level to 43,000 feet the alveolar oxygen pressure drops from 100 to zero. The blood saturation drops from 98 percent to zero and, as we pass 10,000 feet, we begin to experience hypoxia.

At 10,000 feet, the individual experiences *insidious* hypoxia. You don't know you have it. Many of us flying on long flights in unpressurized aircrafts at 10 or 11,000 feet become hypoxic—not enough to be of very serious consequence, but we do become hypoxic. You become tired, overcome with fatigue, sleepy, and rather lethargic. Card playing becomes dull, routine, because you are sleepy. Your fingertips become cold and, with very close observation, you would notice that your nail beds after about four hours at 10,000 feet are blue, rather than a healthy pink. Those of us who don't wear lipstick would notice that our lips are slightly blue—perhaps a little gray—not the normal pink we usually have. You don't know you have insidious hypoxia because it comes on so gradually that the brain is affected very gradually. This demonstrates a very, very important point.

At 50,000 feet the barometric pressure in millimeters and mercury is 87; the water vapor pressure in the lungs and the carbon dioxide in the lungs at 50,000 feet equal that amount, thus the human lung is completely filled with carbon dioxide and water vapor at that altitude.

Now, how does all this fit in with high altitude euthanasia of animals? And why is this method of euthanasia considered humane?

The symptoms of hypoxia are characteristically divided into two groups—subjective and objective. Any physiologist who speaks about subjective symptoms of hypoxia knows exactly about what he is speaking, simply because in order to be in our business, he must have actually experienced hypoxia.

Becoming hypoxic is our initiation into our work. As a matter of fact we do it quite frequently to refresh our memory of the experience.

Every aviator in the Navy, the Air Force, the Coast Guard and the Army must, by regulation, go through a physiology training program every

three years. During this program he must remove his oxygen mask at 30,000 feet and become hypoxic, in order to make him knowledgeable about the symptoms of hypoxia.

Unless you are looking for hypoxia—by knowing exactly when we turn off the oxygen—you would never know when you're hypoxic. Hypoxia is insidious. Therefore, each individual must learn through experience what he thinks is his cardinal symptom of hypoxia. This is so important in aviation, that we must necessarily repeat and repeat and repeat the program. When you fly an aircraft which requires your full attention, you don't have time to worry. You have other things to do other than sit there worrying about hypoxia. So you must be alert to the symptoms.

One of the first symptoms noticed is air hunger: The available air just doesn't seem to satisfy the need. Then comes apprehension which is always seen in students. Fatigue, a queasy feeling, or little dull headache that goes along with the blahs sometimes follows with a little dizziness thrown in for spice to make it interesting. This is the euphoria Tissandier wrote about in 1875. He just didn't care, "The balloon is rising—whoopee! It's a great feeling—I'm glad I'm here!"

We ask our students, as they are becoming hypoxant: "Do you want your oxygen mask?" They answer, "No. This is great, this is terrific, this is really outstanding. It's a tremendous feeling, a great feeling!"

The blahs are gone by this time, and the student feels great. Some students even become a little beligerant when you want to put the mask on them. But then, they experience a new sensation when they put the mask back on and breath oxygen normally. The lights appear to become brighter. This happens because the student's vision had been dulled due to the lack of oxygen. Numbness and tingling are symptoms reported by many people.

Objectively, we notice things like hyperventilation wherein the student appears to want to breathe a little faster. Soon his fingertips become gray-blue and his face becomes a little ashen. There is mental confusion, as demonstrated when students play "patty-cake," a very simple childish routine, but one which requires a certain amount of coordination. We ask two students to do this and after a brief period, they become incoordinated—they aren't there at the same time. The routine becomes a little ridiculous. I might add, hypoxia is hilarious. It's dangerous, but it's hilarious!

There are two very, very important factors, as far as we're concerned, which influence hypoxia: altitude and time of decompression (the height to which you ascent and the rapidity with which you get there). These are very, very important factors. For human beings, hypoxia is affected by alcohol. As a matter of fact, alcohol inebriation is a form of hypoxia. Alcohol affects the brain cell to the point where it will not accept oxygen.

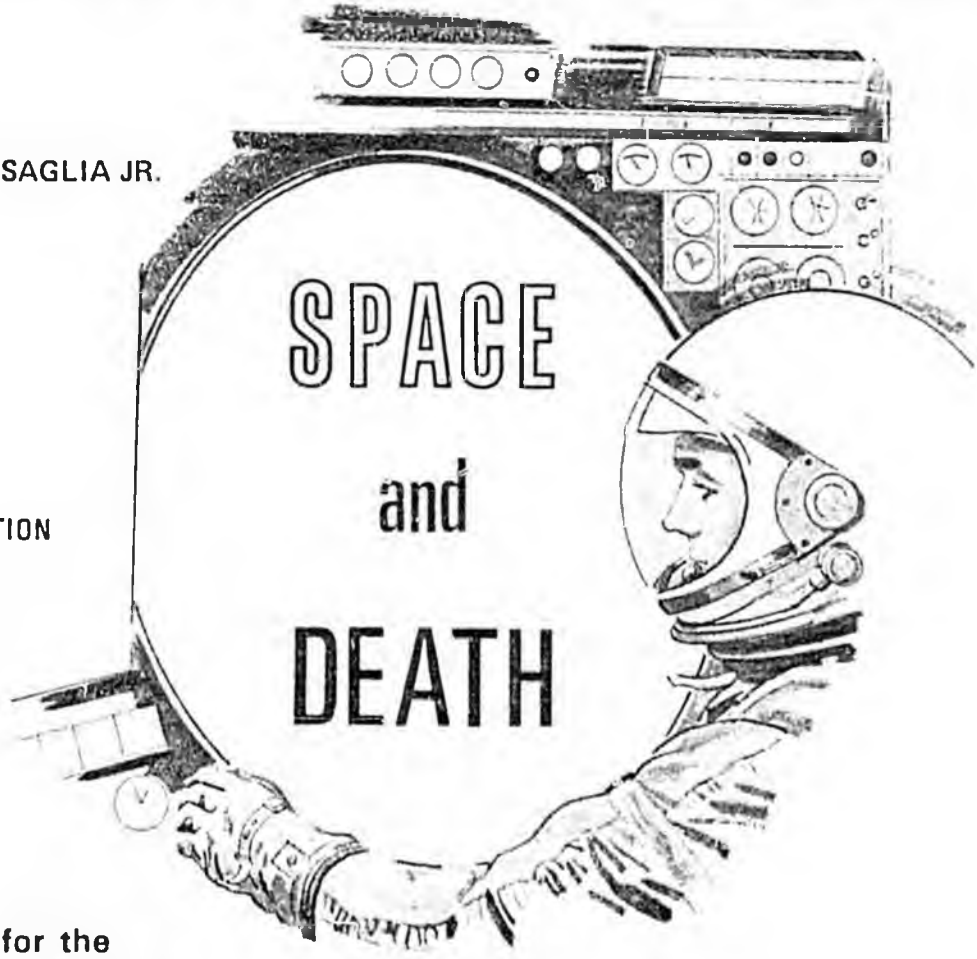
But the most important factor relative to euthanasia is the altitude. The higher you ascend, the shorter your period of useful consciousness. At 50,000 feet, you have about 15 seconds before you lapse into unconsciousness because 15 seconds is about the period of time it takes for an oxygen molecule to go from the lung, to the heart, to the brain. This 15 seconds is all you have! Unconsciousness follows immediately thereafter. Thus, we have a relationship between altitude and time when we utilize decompression for euthanasia.

Decompression, as it is accomplished at the humane society, is a sudden, instantaneous exposure to reduced oxygen pressure. In the Euthanair tank, the rate at which the air is evacuated is about 15 to 20 seconds. During this brief period of time, there is a rapid replacement of the oxygen by carbon dioxide and water vapor in the animal's lungs. This brings about a cessation of oxygen transfer from the lungs to the blood. Hypoxia is essentially instantaneous and unconsciousness follows immediately. (The time factor cannot be reduced much more than that, simply because there is some residual oxygen floating around in the lungs which, of course, is going to the brain. But you notice the inverse relationship between altitude and time.)

To recapitulate all we have discussed thus far about hypoxia:

- Breathing, or respiration, is not impaired in any manner.
- There is no strangulation or suffocation during this period of time, nor is there any indication of distress.
- Life functions are normal in all respects, except that the brain is not receiving the proper amount of oxygen which it requires. And because the brain is insensitive to pain, there is no pain but a feeling of exhilaration which is called euphoria. This is a false feeling of well-being.
- The hypoxia subject, animal or human, does not feel that air is being denied to him—his feelings are normal with a gradual lapse into unconsciousness and subsequent death.
- Natural involuntary functions (those functions which are not controlled by the higher brain centers) will be observed until death occurs.

By MARTIN PASSAGLIA JR.



SPACE and DEATH

Reprinted from a series of articles in
ANIMAL SHELTER S /OPTALK
Published by
THE AMERICAN HUMANE ASSOCIATION
P. O. Box 1266, Denver, Colo. 80201

Man's quest for the stars has revealed that unprotected exposure to high altitude can result in quick, painless, somnolent death. The principle causing that death—hypoxia—is the basis of high-altitude low-pressure euthanasia utilized by many of the nation's animal welfare agencies.

Several years ago, the world was shocked to learn of the deaths of three Russian cosmonauts who perished following a successful and daring space venture. Seemingly, the pendulum of success was about to swing in the direction of the Soviet Union after years of frustration and uncomfortable technological silence. Now the illusion was shattered.

Critical analysis by the skilled Russian scientists and engineers working in concert, educed that these space pioneers had succumbed to hypoxia caused by an improperly sealed hatch on the Soyuz space vehicle. Astute reasoning and careful review of the flight plan, coupled with thorough analysis of the telemetry data, confirmed the nagging suspicion that the hatch was improperly secured following the final extra-vehicular excursion prior to re-entry and return home.

To all of us working in the aeromedical sciences, it was evident that the silent, stealthy killer—hypoxia—had once again claimed the lives of brave, but unsuspecting men, powerless to overcome the insidiousness of its clutches. Hypoxia, the deadly peril of any high-altitude flight, had overpowered its victims unknowingly, and without pain, tranquilizing the space travelers into lassitude, somnolence, mental incapacitation, unconsciousness, and death.

Hypoxia is a very complex medical, physiological and psychological subject. It is probably the greatest danger in aviation (or any ascent from our sea level environment) because of its potential threat to the physiological well-being of the aviator, or adventurer, during all phases of the high-altitude exposure.

The condition of hypoxia is hazardous because the subjective effects of oxygen-lack are generally so slight and imperceptible that immediate recognition of the symptoms is essentially impossible—particularly with task pre-occupation. This condition is manifestly similar to alcoholic intoxication because

the victim is usually unable to discern his actual condition (how he *perceives* his condition) and does not possess the mental capacity to analyze critically his actions.

Because of this mental incapacitation and loss of psychomotor function, corrective action is rarely effected. The condition gradually and painlessly progresses to unconsciousness and eventual death through either loss of aircraft control, or as a natural progression if the hypoxic condition is sustained. The impairment of performance, coupled with the insidious loss of cerebral function (loss of cognition, logical analysis and judgment), facilitate the total incapacitation of the individual who is in a condition of extremis and basically moribund unless revivatory action is initiated immediately.

Basically, the altitudes to which the unprotected human or animal can ascend without physiological jeopardy are limited by the gas laws of physics. Concomitant with any ascent into the atmosphere, there ensues an accompanying reduction of the atmospheric, or barometric pressure.

Exposure of any unprotected individual or animal to these reduced pressures would necessarily have significant effects with respect to the gases normally inhaled. Accordingly, the reduced partial pressure in the high-altitude environment produces a corresponding loss of oxygen partial pressure within the lungs. This results in the transfer of fewer oxygen molecules to the arterial blood, with the subsequent occurrence of hypoxia. The hypoxic condition is accomplished because the amount of oxygen supplied to the arterial blood for oxygenation—that is, oxygen uptake and carbon dioxide release—is reduced; hence the partial pressure (tension) of oxygen supplied to the body tissues is also significantly reduced.

By definition, hypoxia is caused by the acute reduction in the oxygen-carrying capacity of the blood; oxygenation of the arterial blood is deficient to the point where all the essential tissues will not receive the amount of oxygen necessary for physiological well-being. Simply stated, as a result of the reduction of ambient pressure accompanying any ascent, there is a concomitant reduction of oxygen pressure (tension) in the arterial blood within the lungs and subsequently coursing to the brain, thus producing the attendant clinical manifestations.

Unlike asphyxia (the condition whereby oxygen uptake is obstructed or thwarted and carbon dioxide discharge is frustrated), the onset of hypoxia does not present any violent symptomotology and is characteristically benign and placid.

Throughout the hypoxic episode, whether experienced in flight or climbing mountains, there are *no perceptible alterations of the respiratory efforts*. Normal respiration is maintained without the violent pulmonary throes of suffocation or strangulation.

The insidiousness of the condition of hypoxia is magnified by the onset of a state of euphoria which indicates severe judgmental dysfunction to the point whereby the affected individual experiences a sense of well-being although his actual physiological condition is manifestly impaired. In addition, the victim exhibits a total lack of awareness of the danger.

Of all the tissues of the body, the nervous tissue (the tissue of the brain, spinal column, and nerves) has the greatest susceptibility to oxygen deprivation. In hypoxia, the impairment of function becomes quite noticeable initially in the central nervous system where the most profound physiological and psychological disturbances occur. In this respect, it is the cortical matter of the brain which is particularly intolerant to oxygen deprivation, and while degenerative changes are found throughout the entire brain, investigators have found the greatest neuronal damage is found in the cerebral cortex, the gray matter, and the cerebellum. It is these areas of the brain which are in direct control of mental facility, emotions and coordination.

Drinker, in 1938, determined the susceptibility of various cells in the brain to damage following complete arrest of the circulation. The functional neurons of the cerebrum (pyramidal cells) demonstrated a survival time of 8 minutes. However, unconsciousness, following arrest of the cerebral circulation, occurs within 7-8 seconds as demonstrated by Rossen, et al in 1943.

Other investigators, such as Dusser De Barenne and his group, determined the length of time for which the various functions of the brain of an animal can survive following complete arrestment of the cerebral circulation. These data clearly indicate that, while certain reflexive functions remain viable after 5 minutes, cortical functions are not restorable beyond 5 minutes, indicating total degradation of cellular function.

Biochemically, the normal cellular oxidative (metabolic) processes, particularly those of the brain, are disrupted by oxygen lack, e.g. hypoxia. If the oxygen deprivation is prolonged, complete destruction of the enzymic structure within the cell occurs and death follows within minutes. These cellular oxidative processes are irreversible after approximately 5 minutes; hence, following unconsciousness, death occurs rapidly.

There is a physiological difference between hypoxia and the "bends." Hypoxia causes no discomfiture; decompression sickness, however, can result in severe trauma.

It is well known among animal welfare agency managers, and others, that the term euthanasia is used to refer to the painless destruction of suffering animals under precise, well-defined conditions, and therefore, is acceptable as morally and legally correct.

To achieve this painless destruction, any number of acceptable methods are available for the purpose, the selection of which is dictated solely by the number of animals to be destroyed, the degree of expediency desired, and many other situational conditions of logistic, social, psychological, and geographic importance. One of the best mechanical methods which is non-invasive, efficient, expeditious and psychologically non-traumatic for the animal handlers, is the high-altitude low-pressure method developed by Dr. Charles Lombard following his experiences with altitude chambers during World War II.

Predicated on sound physiological principles, and extensive low-pressure chamber experiences, many aerospace physiologists were quick to realize the efficacy of the low-pressure chamber as a quick and painless method for animal destruction.

The design of the chamber, in which the air pressure is lowered sufficiently to the point whereby the oxygen tension of the blood and tissues, and the brain in particular, is insufficient to maintain normal life functions, followed as a natural consequence. The sudden or rapid exposure of an animal by decompression to an atmosphere devoid of oxygen pressure (about 55,000 feet or 70 mm. of mercury) leads to unconsciousness within 10-15 seconds, irreversible cellular brain damage within 5-8 minutes, and death.

In any discussion relating to the effects of exposure of an animal or man (unprotected) to reduced atmospheric pressures, it is necessary to distinguish between those conditions caused by the reduction of the pressure itself (with its subsequent physiological alterations to the oxygen-carrying capacity of the blood and the consequent hypoxia) and those clinical conditions which result from the actual change in pressure mediated by the way of the various gas laws affecting pressure changes.

The distinction is necessary to describe accurately the observed clinical manifestations since certain effects vary with the amount of pressure change, e.g. whether the change involves 10 mm. or 100 mm.; the rate of the pressure change, e.g. whether the change occurs in one minute or 10 minutes; and the type of the pressure change, e.g. whether the change is positive (increased) or negative (decreased). These latter physiological effects are aeromedically referred to as dysbaric manifestations and are limited to all the effects of pressure change, exclusive of hypoxia.

One must always bear in mind that the bodies of animals are solid, noncompressible structures devoid of evacuations except for those certain well-defined gas-containing cavities such as the paranasal sinuses, the middle ear, the alimentary canal (stomach and intestines) and the lungs. These cavities have varied modes and degree of communication with the ambient atmosphere via the body's natural orifices.

The lungs, for example, communicate freely to the ambient by way of the bronchi and trachea; the sinuses by way of small, generally unobstructed ducts within the upper nasal chamber; the middle ears by way of the eustachian tubes, which communicate intermittently into the nasopharynx; and the alimentary canal, by way of the mouth and anus respectively.

When the body is exposed to reduced pressures, the air within these cavities expands in accordance with physical gas laws—according to Boyle's law, the volume of a gas varies with the pressure, if the temperature is constant—and evacuates normally through a corresponding orifice. Because the air within these spaces can escape naturally and unobstructedly, there is little or no discomfiture during the exposure to the ascent; nor is it possible for the body to burst, as sometimes alleged.

Otological examination of the eardrums of experimental animals exposed to rapid decompressions at the USAF School of Aerospace Medicine failed to reveal any internal damage to the middle ear during the episode. Furthermore, repeated rapid decompressions of aviation personnel during routine training sessions support the experimental evidence provided by the Air Force investigators. One must emphasize, however, that it is only with exposure to increased pressure as experienced during scuba diving, or during the *descent* phase of aircraft flight, that compression of the tympanic membrane occurs with the probability of severe trauma following the sustained descent.

Further misunderstanding confuses the difference between hypoxia and decompression sickness or "bends."

As mentioned previously, exposure of an unprotected animal to reduced pressures produces significant effects with respect to the gases normally dissolved in the blood and body fluids. Accordingly,

reducing the oxygen pressure or tension in the high-altitude environment, or in the low-pressure chamber produces a corresponding reduction in the oxygen content within the lungs, blood, and specifically, the tissues of the brain, thus producing hypoxia.

Concomitantly, reducing the pressure on the same unprotected body can cause nitrogen, the major constitutent gas of the atmosphere, to come out of solution from the blood and other body fluids, and can cause decompression sickness or bends. This physical reaction proceeds in accordance with the physical gas law postulated by Henry, stating that the amount of gas dissolvable in a solution is directly proportional to the partial pressure of the gas to which the solution is exposed. Although the reaction proceeds naturally, decompression sickness in an animal or man is not always the resultant consequence.

Actual decompression chamber experience, reinforced by laboratory experimentation, indicates that the manifestation of the bends is not always a spontaneous occurrence following decompression, but generally occurs after several minutes of exposure in the hypobaric environment.

Because the unprotected body is unable to tolerate the attendant oxygen deficit, bubble formation and the clinical manifestation of bends would occur in the unconscious or expired state. But the animal is dead. The brain has terminated its vital functions and only reflexive action remains for approximately 20-25 minutes. Accordingly, the body is totally unaware of any terminal reflexes, body ejecta, or alterations within the internal organs. If decompression sickness occurs—that is, if bubble formation does occur in the blood and tissue fluids, there is no dolorific reaction to the trauma.

The words "bubble formation" should be clarified at this point, since a misconception may exist regarding this physical reaction. Bubble formation refers to the evolution of minute gaseous entities within the liquid environment of the blood and tissue fluids and accumulating in the joint capsules primarily. The evolution is a very slow, steady process and not an effervescence, as possibly misunderstood by many.

As animal welfare agency personnel are all very much aware, there are any number of methods which can be employed to terminate life, all of which can be classified as humane, and are humane in the strictest sense. Life can be terminated expediently by shooting, electrocution, beheading, inhalation of toxic gases, injection of toxic agents and many other means. All these methods are capable of destroying the animal without the infliction of unnecessary pain or suffering.

About the Author

Martin Passaglia Jr. is a captain in the United States Navy Medical Corps, Corpus Christi, Tex. He has had extensive experience in aerospace physiology and is a recognized authority on high-altitude studies. This article is based on his presentation at the 99th annual meeting of The American Humane Association in San Diego in October.

However, all these methods also possess certain features which mitigate against their general acceptance. Shooting and beheading are most certainly efficient and painless, but are socially and psychologically unacceptable for most of us. On the other hand, the administration of a lethal dose of barbiturate may be the method of choice for a single, benign, moribund animal; but for those exceedingly large numbers of spirited, intractable animals, the low-pressure method should be considered as an efficient, quick, and humane method of euthanasia well within the definition of humane treatment.

To knowledgeable and informed individuals, this method provides a workable, highly efficient and inexpensive solution to the most distasteful problem which must be addressed by animal welfare agencies on a continuing basis.

The role of executioner is a difficult and repugnant one for all of us to play because of the physical and emotional demands imposed by handling the animals and witnessing their destruction. The application of a humane, mechanical method which minimizes the intimate handling of the animals, as well as the distasteful observation of the animals as they expire, certainly provides for greater psychological acceptance by all involved.

Perhaps if our animal welfare agencies were not overwhelmed with the ever-increasing and unwanted animal populations, none of the previously mentioned methods would be necessary, and the limited number of voluntarily presented animals could be euthanatized individually.

However, this is not the case, nor will it ever be so, until public attention is focused on this acute, almost epidemic problem of animal overpopulation and will accept its share of the responsibility for the resolution. High-altitude euthanasia is not *the* answer; it is a method, a good, efficient, humane method.

February 1983

Mr. Joe Joesephson, Chairman
Senate Committee of Health
Education & Social Services
Pouch "V"
Juneau, Alaska 99811

Dear Sir: RE: SENATE BILL # 25
EUTHANASIA OF ANIMALS

This letter is sent to express deep concern over the above proposed Bill and to protest the proposed change in the present law regarding the illegal use of a decompression chamber for the euthanasia of animals in the State of Alaska.

The present law was enacted only after years of careful study and consideration on the matter and reflects the inhumane use of a decompression chamber for this purpose.

A packet of factual information was sent to Juneau (HESS committee) giving detailed background data and information on the subject and I refer you to this packet.

I URGE YOU TO KILL THIS BILL NOW and thank you for your early attention to the matter.

With Sincere Concern

Michael Hammond

Alaska State Legislature

Senate

Official Business

Pouch V
State Capitol
Juneau, Alaska 99811

January 21, 1983

ALL MEMBERS OF THE SENATE
HEALTH, EDUCIATON AND SOCIAL SERVICES COMMITTEES

ALL MEMBERS OF THE SENATE
JUDICIARY COMMITTEE

Re: SB 25

Gentlemen:

Apparently the captioned bill, which I introduced by request, is controversial. I have attached proof of that assertion.

If either or both committees intend to hold hearings, and will advise me of that fact, I will endeavor to have one or two witnesses from Ketchikan attend to testify.

Regards,

3—

Robert H. Ziegler, Sr.

RHZ:lk

Enclosures

Animal control officials clarify use of chamber

by Steve Hansen
Times Writer

Municipal animal control officials said an article which appeared in The Anchorage Times concerning the use of decompression chambers to destroy pets was inaccurate.

The story appeared in the Sunday edition of The Times and was entitled "Chamber takes the pain out of killing animals." The story was based on information from Edith Christianson, director of the Alaska Society for the Prevention of Cruelty to Animals.

In the story, Christianson was quoted as saying that most Alaskan animal control officials favored the use of decompression chambers to destroy sick or unwanted pets because it was a more humane way to kill unwanted pets than the use of sodium pentobarbital injections.

Until 1980, Christianson and the Society for the Prevention of Cruelty to Animals (SPCA) had been under contract to operate the Municipal Animal Shelter. The SPCA had used a decompression chamber to destroy animals.

But in 1980, the contract to operate the shelter was taken away from the SPCA and given to Smith Security, which now runs the shelter under the supervision of Vince Fennimore, municipal director of animal control.

Monday, Debra Eisen, spokesman for the Municipal Animal Shelter, and Fennimore, said the Alaska Legislature outlawed decompression chambers in 1980. Eisen said Smith Security had previously banned use of the chambers because of numerous scientific studies which indicated it caused a great amount of pain to the dying animal.

Eisen said most animal shelters throughout the nation were now using sodium pentobarbital injections to destroy animals because the studies showed the injection caused a quicker and more painless death.

Eisen and Fennimore also said the statistics in the story were incorrect, including:

- The number of animals destroyed in the municipal shelter each year has decreased — not increased. The number of animals destroyed at the city shelter reached an all-time high in 1975 while under SPCA operation when 10,324 animals were killed, a monthly average of 860 deaths, Fennimore said. But the number of animals destroyed has since decreased each year since 1975, reaching a low of 5,750 in 1982, an average of 479 per month.
- Fennimore said municipal shelter statistics come to the same conclusions as a national study by the Humane Society of the United States which stated: "We advocate sodium pentobarbital injection as the most humane method of euthanasia . . . decompression is clearly not a humane death."

Anchorage Times 1/18/83

Robert H. Ziegler
Senator
301 State Office Bldg.
Juneau, Alaska 99801

14 Jan 83

Dear Bob,

In regard to our conversation on the 13th concerning the method of terminating the life of animals by the Ketchikan Gateway Borough animal control staff.

In 1973, I was on the "Animal Control Advisroy Board" along with assembly members Ed Zastrow, Monte Guymon and animal control officer Pat Wise.

Patricia and I discussed in great length the available means of performing an unwanted and unpleasant task, that of dispatching the unwanted animals.

The "Euthanasia" or de-compression chamber was chosen because it was the most humane way to do the job and at that time was accepted by the United States Humane Society as well as accepted, recommended and used by the Oregon Humane Society in Portland, Oregon.

When properly used, the animal simply goes to sleep and never wakes up, ask any military jet pilot that has had to experience "Hypoxia" as part of his training and he will tell you that there is no pain or other d's-comfort, the world just goes away.

This is the same way the animal goes, only it's a one way trip.

The left-overs are repugnant to most humans but the spirit of the animal is long gone by that time.

Your servant and friend,

Lee

L.W.(Lee) Vollmer
Box 6011
Ketchikan, Alaska 99901

Introduced: 1/18/83
Referred: Health, Education and Social Services and Judiciary

BY ZIEGLER
BY REQUEST

IN THE SENATE

SENATE BILL NO. 25

IN THE LEGISLATURE OF THE STATE OF ALASKA

THIRTEENTH LEGISLATURE - FIRST SESSION

A BILL

For an Act entitled: "An Act repealing the restriction against killing an animal by the use of a decompression chamber."

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF ALASKA:

* Section 1. AS 11.61.140(a)(3) is repealed.

Health, Education and Social Services Committee

Official Business

Alaska State Legislature

Senate

Pouch V
State Capitol
Juneau, Alaska 99811
465-4907
465-4908

February 9, 1983

Dody Froehlich
Secretary
CARE Alaska
P.O. Box 10-1424 S.S.
Anchorage, Alaska 99511

Dear Ms. Froehlich:

I appreciate your message concerning SB 25. Because of the interest in this subject, as I may have previously reported to you, I am not planning to move SB 25 out of committee, unless there are specific request for a hearing and, then, if so, only after those around the state who share your concerns have had a full opportunity to be heard.

On the face of it, I do not see that SB 25 would serve any valid public purpose although, of course, I cannot speak for all of my committee members.

Best wishes and thanks for writing as you did.

Sincerely,

Joe P. Josephson

JPJ/rmc

P.O. Box 10 - 1424 S. S.
Anchorage, Alaska 99511

CARE
ALASKA, INC.

January 26, 1983

State of Alaska
Senate Committee on Health, Education
and Social Services
Attn: The Honorable Joe P. Josephson, Chairman
Pouch "V"
Juneau, Alaska 99811

Re: Senate Bill 25

Dear Senators:

Further to our recent Public Opinion Message asking that you not support SB 25, we are confident that all of you realize that there were valid, humane reasons for outlawing the use of the Decompression Chamber for euthanizing animals in Alaska some 2½ years ago. To reverse this important legislation would be an enormous step backwards and would once again subject animals to the most inhumane death in a Decompression Chamber.

We are aware that your Committee is being sent a packet of factual data on this subject, and we see no need to duplicate this information, which we are certain will command your attention and that you will all arrive at the inescapable conclusion that it is essential that SB 25 be stopped in your Committee.

Our membership knows of no animal related organization, including veterinary groups, in this area that supports the use of the Decompression Chamber. Many respected national organizations, including the Humane Society of the United States and the American Veterinary Medical Association, have publicly stated that euthanasia by injection is the preferred, humane method and have specifically spoken out against the Decompression Chamber.

The Anchorage Municipal Animal Control operation has been tremendously improved over the past three years operated by a new contractor, who euthanizes by injection.

It is sad enough that human irresponsibility and lack of concern dictates that thousands of perfectly health, innocent animals must be destroyed in Alaska each year. The very least that we owe these animals in our civilized compassion is a painless, quick death, which the Decompression Chamber does not offer.

Sincerely,

CARE ALASKA, INC.

Dody Froehlich
Secretary

C CITIZENS for A ANIMAL R RESPONSIBILITY and E EDUCATION

MSG 83-00003840 PRTY 1 01/26/83 11:16:42 ORIG: LA05 IN= 0003 OUT= 0037
FROM: MARCIE, ANC INFO TO: POM, JUNEAU INFO
TARGET: LJHL SUBJ: P O M

1/25 MARCIE, ANC INFOOMNI #3840

TO: SENATORS JOSEPHSON, V. FISCHER, HALFORD, P. FISCHER & MOSS

FROM: ARDENE EATON, P. O. BOX 10-1592, ANCHORAGE 99511
345-0281 H

RE: SENATE BILL 25

I WANT TO PROTEST AGAINST THE LEGALITY OF THE DECOMPRESSION CHAMBER. IT IS EXTREMELY INHUMANE!

EOM

SB 25

Health, Education and Social Services Committee

Official Business

Alaska State Legislature

Senate

Pouch V
State Capitol
Juneau, Alaska 99811
465-4907
465-4908

January 27, 1983

Dody Froehlich
P.O. Box 110849
Anchorage, Alaska 99511

Dear Ms. Froehlich:

Senate Bill 25 is before the Senate Judiciary Committee at this time. The sponsor, Senator Ziegler, of Ketchikan, introduced the bill by request but has noted that it is controversal in matter.

If and when the bill comes before the Health, Education and Social Services committee later, I will definitely require hearings before permitting action on the measure.

Should hearings be held, we will let you know so that you will have an opportunity to testify before the committee in person, by teleconference, or otherwise.

Sincerely,

Joe P. Josephson

JPJ/rmc

FROM: SHIRLEE, ANC LIO TO: FOMS, DUNLAO INFO
TARGET LJHL SUBJ: FOM

1/25/83, SHIRLEE, ANC LIO, MSG 3597

TO: SENATOR JOSEPHSON, CHAIRMAN, HESS COMMITTEE
SENATORS V. FISCHER, HALFORD, F. FISCHER, AND MOSS

FROM: DODY FROEHLICH
P. O. BOX 110849
ANCHORAGE, AK 99511 (H) 345-1121

URGENTLY REQUEST THAT YOU STOP SENATE BILL 25 IN COMMITTEE. THE DECOMPRESSION CHAMBER IS NOT HUMANE, WHICH IS WHY IT IS NOW ILLEGAL.

****

1/25/83, SHIRLEE, ANC LIO, MSG 3597

TO: SENATOR JOSEPHSON, CHAIRMAN, HESS
SENATORS V. FISCHER, F. FISHER, HALFORD, AND MOSS

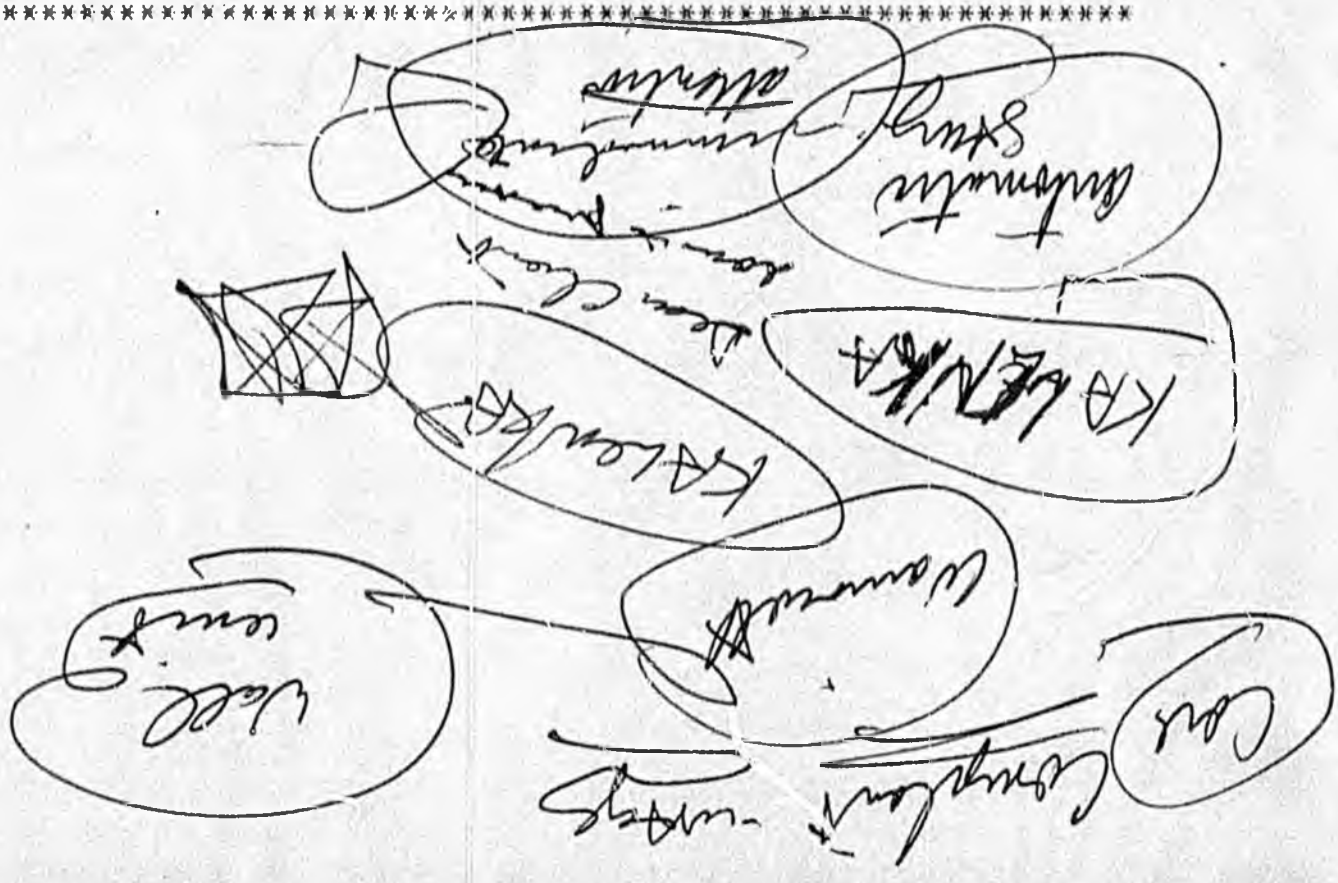
FROM: CARE ALASKA, INC.
(CITIZENS FOR ANIMAL RESPONSIBILITY & EDUCATION)
DODY FROEHLICH, SECRETARY
P. O. BOX 1101424, ANCHORAGE, AK 99511

WE ARE SHOCKED ABOUT SENATE BILL 25 WHICH WOULD TAKE ANIMAL WELFARE A GIANT STEP BACKWARDS.

PLEASE DO NOT GIVE THIS BILL YOUR SUPPORT.

LETTER TO FOLLOW.

****



Health, Education and Social Services Committee

Official Business

Pouch V
State Capitol
Juneau, Alaska 99811
465-4907
465-4908

Alaska State Legislature

Senate

February 9, 1983

Michael Kreger
221 Muldoon Road, #241
Anchorage, Alaska 99504

Dear Sir:

Thank you for your message concerning SB 25. Many constituents have written to me on this subject, and all in the Anchorage area appear to oppose the measure.

I therefore do not plan to have any hearings on the bill at this time, and I will not do so unless specifically requested to do so by members of the public.

I appreciate your concern and wish to thank you for participating in the legislative process as you have by sharing your views with me.

Best wishes.

Sincerely,

Joe Josephson.

Joe P. Josephson

JPJ/rmc

TO SENATOR JOE JOSEPHSON

FROM MICHAEL KREGER, 2221 MULDOON ROAD, #241, ANCHORAGE, AK 99504
338-0006

I OPPOSE SB 25 INTRODUCED TO YOUR COMMITTEE ON HEALTH, EDUCATION, AND SOCIAL SERVICES.

****

PDM 1/27 [illegible] ANC LIO MSG 4371 SB 25

TO: SENATORS JOSEPHSON, V. FISCHER, HALFORD, F. FISCHER, MOSS

FROM: MAXINE VEHLOW, 2905 WEST 31TH, ANCHORAGE 99503
248-1625 H

PLEASE KILL SB 25. THE DECOMPRESSION CHAMBER IS AN OBSOLETE AND INHUMANE WAY OF DISPOSING OF ANIMALS. WE ARE A LEADER NOW AND CHANGING BACK WOULD BE A SERIOUS SETBACK.

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Decomp

R - you have a previous letter on this

01/28/83 10:52:48 ORIG: LA01 IN= 0001 OUT= 0027
JUNE, ANC LIO TO: POM, JNU INFO
TARGET: LJHL SUBJ: POM

4

1/28/83, JUNE, ANC LIO, MSG 4474

TO: SENATORS JOSEPHSON, RAY, AND ZIEGLER

FROM: JULIA DUYHCH, 4422 IRENE DRIVE, ANCHORAGE, AK 99504
333-7822, 272-2501

REPEAL OF THE RESTRICTION AGAINST THE USE OF THE DECOMPRESSION CHAMBER WOULD BE THE MOST INHUMANE ACT. DECOMPRESSION CHAMBERS CAUSE AN ANIMAL TO HAVE A HORRIBLE DEATH.

/S/ JULIA DUYHCH

animal

Nancy Dutmir

MSG 83-00004763 PRTY 1 01/20/83 17:18:08 ORIG: LJ04 IN= 0049 OUT= 0178
FROM: SUE TO: JUNEAU
TARGET: LJHL SUBJ: FOM

TO: ALL LEGISLATORS

FROM: BARBARA KULLANDER
BOX 2182
JUNEAU, AK 99803
789-2322

I'M AGAINST ERA. A

EOM**********
TO: ALL LEGISLATORS
RE: SJR 1

FROM: MARY ANNE BARHAM
P.O. BOX 116
KODIAK, ALASKA 99615

PLEASE SUPPORT THE CONTINUANCE OF THE EQUAL RIGHTS AMENDMENT FOR ALASKA BY SUPPORTING SJR 1.

FROM: JAN MC CRIMMON, 2335 EAGLE RIVER ROAD, EAGLE RIVER, AK. 99577
PHONE: 694-3831

I URGE YOUR SUPPORT FOR THE PASSAGE OF SJR-1 FOR THE ERA. F

****

FROM: LUCILLE FREY
1741 WESTVIEW CIRCLE
ANCHORAGE, AK 99504 (H) 337-3543

WE'VE WAITED LONG ENOUGH. PLEASE SUPPORT THE ERA RESOLUTION, SJR 1. F

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FROM: MARILEE COLUMBIA
SRA BOX 6657 A1
PALMER, AK 99645

SB25 REPRESENTS A CRUEL WAY OF DISPOSING OF ANIMALS. I'D LIKE THE LAW TO STAY THE WAY IT IS AT THIS TIME. X X

Animal Decompression

Health, Education and Social Services Committee

Official Business

Alaska State Legislature

Senate

Pouch V
State Capitol
Juneau, Alaska 99811
465-4907
465-4908

See: Animal Decompression Chamber

January 18, 1983

Terry Burrell
3716 Wesleyan
Anchorage, Alaska 99504

Dear Terry:

Your message concerning the animal decompression chamber is acknowledged.

If and when this legislation comes before the Senate, I'll be mindful of your views in the course of any deliberative process involving that issue.

With best wishes, Iam

Sincerely,

Joe P. Josephson

MSG 83-00001903 PRTY 01/17/83 10:48:33 ORIG: LA03 IN= 0001 OUT= 002
FROM: JUNE, ANC LIO TO: POMS, JNU INFO
TARGET: LJHL SUBJ: POM 21

1/17 JUNE, ANC LIO, MSG 1903
TO: SENATOR ZIEGLER AND ALL SENATORS

FROM: TERRY BURRELL, 3716 WESLEYAN, ANCHORAGE, AK 99504
H-333-2774

IN ALL THAT'S HUMANE AND KIND, DO NOT ALLOW THE ANIMAL DECOMPRESSION CHAMBER TO BE USED IN ALASKA.
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