



April 2013

Temperature and Humidity in Dog Kennels

Question. What are the requirements for temperature and humidity within commercial dog kennels?

Answer. Dogs and puppies must never be subjected to any combination of temperature and humidity for a duration that is detrimental to the animal's health or well-being, taking into consideration such factors as the animal's age, breed, overall health status and acclimation.

Q. How long does it take for a dog to become acclimated to high or low temperatures?

A. It can take anywhere from 7 to 60 days for a healthy dog to become acclimated to high (more than 85° Fahrenheit) or low (less than 45° Fahrenheit) temperatures. Factors such as differences in body size and shape, hair coat, body condition and the dog's overall health status greatly influence the time required for it to acclimate. The safest approach is to plan to move dogs during the time of the year with the least amount of temperature and humidity extremes – spring or fall.

Q. What are signs that dogs display when they cannot adjust to the prevalent climate and environment?

A. The following are observable indications of problems.

Heat stress

Signs may include:

- excessive panting
- excessive salivation

- thirst
- restlessness
- anxiety
- generalized weakness

Untreated heat stress can lead to a heat stroke, which is potentially fatal.

Heat stroke

Signs may include:

- elevated rectal temperature:
 - more than 104° Fahrenheit requires immediate action
 - more than 106° Fahrenheit is a dire emergency
- vigorous/uncontrollable panting
- labored breathing
- dark red gums
- tacky or dry mucus membranes (specifically the gums)
- salivating, thick saliva or foaming at the mouth
- vomiting
- bloody diarrhea
- dehydration
- lying down and unwilling or unable to get up
- trembling, dizziness, disorientation

Extreme signs include:

- collapse
- loss of consciousness; coma
- seizures
- death

Cold stress/hypothermia

Signs in order of appearance:

- decreased rectal temperature:
 - mild hypothermia (90 - 99° Fahrenheit) requires action



- moderate hypothermia (82 - 90° Fahrenheit) is an emergency
- severe hypothermia (less than 82° Fahrenheit) is a dire emergency
- mental depression
- lethargy
- weakness
- shivering
- muscle stiffness
- slow heart rate
- low blood pressure
- reduced respiratory rate and depth of respiration
- stupor
- inaudible heart sounds
- labored breathing
- coma
- fixed and dilated pupils
- death

Q. Are there certain breeds of dogs that are more sensitive to temperature extremes?

A. Yes. The short-nosed/brachycephalic breeds such as pugs, Pekinese, Lhasa Apso, Boston terrier, English bulldog, boxer and Neapolitan mastiff are known to be the most sensitive to heat extremes. The smaller, short-legged breeds with short hair or hairless coats are the most sensitive to the cold (e.g., dachshund, chihuahua, Chinese crested). Individual dogs have their own limits for tolerating temperature extremes and can succumb to hyperthermia or hypothermia.

Q. What dogs are most at risk for climatic/environmental stresses?

A. Risk factors (heat stress or heat stroke):

- dogs in environmental temperatures more than 85° Fahrenheit

- dogs in areas with relative humidity levels of more than 70 percent
- obese dogs
- older dogs
- very young dogs
- dogs with heart conditions
- any debilitated dog
- brachycephalic (short-nosed) dogs
- dogs that are dehydrated
- dogs without enough shade or potable water
- dogs that were moved to hot and humid climates and are not yet acclimated

Risk factors (cold stress / hypothermia):

- dogs that are not acclimated
- dogs in environmental temperatures < 45 degrees Fahrenheit
- dogs that do not have access to dry and warm shelter
- dogs that have become wet
- neonates/puppies under six months old
- elderly dogs
- dogs that have injuries or health issues
- dogs that are obese or underweight
- dogs that are dehydrated
- short hair coated dogs
- small-breed dogs
- breeds of dogs which have short legs (Their abdomen, chest, groin and lower extremities are more exposed to snow or icy water.)



Q. Why are short-nosed breeds so sensitive to temperature and humidity?

A. The short-nosed breeds are not anatomically as efficient at handling increased temperature and humidity levels as normal skull shaped dogs. They do not have as much surface area available within their nose and throat regions to function in decreasing body heat during the panting process compared to other breeds of dogs.

Q. Why does my Alaskan malamute or Siberian husky need to have protection from the cold? Weren't these breeds developed to withstand cold weather?

A. Confinement to an enclosure limits a dog's ability to make adjustments to temperature and weather. All dogs are susceptible to extremes in temperature and humidity levels, and they require protection from the wind, cold, heat, and exposure to rain, ice and snow. This protection needs to include shade and a shelter with a wind/rain break and adequate bedding in cold weather.

Q. Why is providing shade of such importance?

A. Dogs are not very efficient at dissipating body heat and cannot tolerate elevated temperatures/humidity or direct sunlight for long periods of time. Shelters for outdoor dogs may become too warm for the animals to remain inside to avoid the direct sunlight. Every dog in an enclosure is required to have access to adequate shade to prevent overheating and discomfort.

Q. Why is access to fresh water so important in both high and low temperatures?

A. Dehydration can actually inhibit a dog's physiological responses involved in both its dissipation of and retention of body heat. A dog's temperature compensation mechanisms can be compared to how a radiator functions in preventing an internal combustion engine from overheating or freezing by the circulation of water and antifreeze through the engine block. If a dog becomes dehydrated during either high or low temperatures, the flow of blood to the areas of the body involved in body temperature regulation cannot react in a normal manner, thereby putting the animal at greater risk for developing hyperthermia or hypothermia. A dog must have access to fresh, cool water when the weather is hot, and non-frozen water when the weather is cold.

Q. What extra precautions should I take with my nursing females and their puppies?

A. Puppies do not acquire the ability to efficiently regulate their body temperature until they are three or four weeks old. These young puppies have not yet developed the ability to remove body heat by panting, or to generate body heat by shivering. Therefore, the temperature, humidity and ventilation within the whelping facility should be monitored very closely. Ideal breeding conditions for dogs occur when temperatures are maintained between 60° and 68° Fahrenheit, with a relative humidity level of 65 percent. Temperature extremes can harm the lactation and digestion of nursing females. The harmful effects of dehydration, due to the lack of potable water and/or excessive panting, can be increased in nursing females and lead to decreased puppy survival.

Q. Can temperature stress affect fertility in my dogs?

A. Heat stress or heat stroke can directly decrease both spermatozoa production and survivability within the male reproductive tract, similar to the effects that male dogs experience after running a fever during a viral or bacterial infection. Exposure to high or low temperature extremes may also have direct effects on pregnancy and embryo survival in breeding females.

Q. What should I do if one or more of my dogs develop heat stress/stroke or hypothermia?

A. Contact your attending veterinarian immediately and follow his/her instructions. Methods to prevent these situations should be discussed with your attending veterinarian prior to an actual event. Heat stroke and hypothermia are potentially life-threatening conditions and are considered medical emergencies.

For more information contact:

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