

# Burns: First Aid for Pets

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## [FIRST AID FOR BURNS]

Few injuries in pets are as traumatic, painful and disfiguring as a burn. Unlike other injuries, a burn, by its very nature, causes tissue damage; sometimes complete tissue damage. Often it takes time for the extent of the damage to be fully realized. Burns can be caused by heat sources, chemicals or radiation. Most burns that dogs, cats and other pets receive come from a hot surface, appliance or substance found in and around the home. It is very important that the home be "pet-proofed" to prevent an injury of this nature.

How do most burns occur?

Burns to pets can occur from a variety of sources:

- Thermal (heat-related) burns
  - Open flames
  - Electric heating pads
  - Hot-air dryers
  - Heat lamps
  - Hot metal surfaces such as woodstoves, engine mufflers and radiators
  - Boiling liquids
  - Hot semi-liquids such as tar
  - Electrical currents, primarily biting electric cords
  - Sunburn
- Strong chemicals
- Radiation
  - Therapeutic radiation therapy
  - Microwave ovens



How are burns categorized?

Thermal and chemical burns are generally placed into one of three categories:

1st degree: Superficial partial thickness wounds - These burns involve only the top layer of skin. The symptoms are generally limited to minor pain and redness. An example of a superficial partial thickness burn is mild sunburn. 1st degree burns heal quickly and generally don't require extra care.

2nd degree: Deep partial thickness wounds - These burns involve the deeper layers of skin and will produce blisters on the skin surface. They are more painful, introduce a risk of infection and take longer to heal. 2nd degree burns require veterinary attention.

3rd degree: Full thickness wounds - These burns involve complete destruction of all skin layers. Charring is seen. There is usually no sensation left in the area. With the loss of the skin's protective layer, the animal is now highly susceptible to a bacterial infection. Circulation to the burned area is compromised as is the immune response. In addition, burns of this type greatly affect the pet's electrolyte balance. These burns are the most dangerous and life-threatening. They require immediate and extensive veterinary care.

What do burns look like?

Sunburn: Pets exposed to direct sunlight for an extended period of time may develop sunburn. This type of burn is usually a 1st degree burn. Sunburns typically occur when a pet's coat is trimmed too short exposing his skin to the sun's rays. Sunburn may or may not be obvious. While there is reddening of the skin and pain, burns of this type are generally not life-threatening and resolve quickly.

Contact burns: Contact burns resulting from flames or hot surfaces are usually obvious from their onset but may take 24-48 hours to fully appear. Contact burns are usually 2nd or 3rd degree burns. They are very painful and can cause significant tissue damage.

Burns caused by commonly used items such as heating pads or hot-air cage dryers' may be difficult to diagnosis. The tissue damage is typically hidden by the animal's fur. It may take 24-48 hours for the full extent of the burn to appear. The burned area will appear hard and dry. Burns of this type result in a 1st or 2nd degree burn.

Chemical burns: Burns caused by chemical agents may also be difficult to recognize because the pet's hair coat may hide the burn. Chemical burns are generally erosive and necrotic (leading to the death of tissue) in nature. These burns are usually 2nd degree but may be 3rd degree. Again, it may take up to 48 hours for the full extent of the burn to be apparent.

Electric heating pads should NEVER be used on pets!

**Electrical burns:** Electrical burns are most commonly found in the mouth as a result of the animal chewing on an electric cord. The lips, gums, tongue and palate (roof of the mouth) may be involved. Electrical burns are also erosive and necrotic in nature. There is usually one central area of necrosis (dead tissue) surrounded by areas of varying tissue damage. Dogs are more often affected.

**Radiation burns:** Radiation burns in pets are most often associated with radiation therapy for a type of cancer. They are of concern because burns of this nature affect wound healing associated with any surgery that may have been performed.

Radiation burns are classified as:

- **1st degree** - cutaneous hyperemia (reddening of skin)
- **2nd degree** - dry sloughing of the outer layer of skin
- **3rd degree** - moist sloughing of deeper layers of skin
- **4th degree** - complete skin death

Often times, the animal's behavior will change as a result of the pain caused by the burn; before there are any obvious clinical signs of a burn. If the burn becomes infected, it may develop a foul smelling discharge with areas of necrotic (dead) tissue that will need debridement (the removal of dead tissue). Debridement often reveals a deeply infected wound that will require extended, aggressive nursing care, patience and time.

How are burns diagnosed?

Diagnosing a burn is usually straight forward if the event is observed. Burns that are not observed or are malicious in nature are more difficult to diagnosis. As mentioned before, most burns develop over time as tissue damage sets in. It is important to closely observe the pet for sign of the lesion spreading.

How are burns treated?

In almost every case, a pet that has suffered a burn should be evaluated by your veterinarian. It is critically important that the effect the burn has on the animal's overall health be assessed. Besides the burn itself, the pet may develop an electrolyte imbalance, kidney failure, anemia and a systemic infection. If appropriate, the pet should be evaluated for smoke inhalation. The extent of the burn, the location of the burn and the percentage of the pet's body that is involved in the burn, all play a role in assessing and evaluating the long term outlook for the pet.

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### Sunburn

If your pet becomes sunburned, consult your veterinarian. The extent of the sunburn will define what treatment is necessary. Do not apply ice, butter or any other ointment unless directed by your veterinarian.

Prevention is better than treatment, so help your pet avoid direct sunlight. If direct sunlight is unavoidable, apply sunscreen to vulnerable areas on your pet, especially shaved areas and non-pigmented (white) areas. Use sunscreens that contain PABA (para-aminobenzoic acid) and avoid those that contain zinc. Try to prevent your pet from licking off the sunscreen.

### Thermal burns

Thermal burns may be 1st, 2nd or 3rd degree burns. In the case of thermal burns:

- Extinguish all flames. If electricity is involved, make sure the power is turned off.
- Avoid being bitten. You may have to muzzle your pet.
- Apply cool water compresses with a clean (sterile) cloth. This may prevent the burn from penetrating deeper into the tissues. Change the compress frequently, and keep the site cool and wet. If the burn involves only one part of the body, you can submerge the area in cool water.
- Do not break any blisters that may have formed.
- Do not apply any ointments or butter-like substances.
- Do not apply ice to the burn.
- Carefully transport the animal to your veterinarian!

### Chemical burns

- Avoid being bitten. You may have to muzzle your pet.
- Make sure the area is well ventilated.
- If the burn is from a dry chemical, brush away as much of the substance as possible. Be sure to protect the mouth, nose and eyes of you and the pet.
- Wash the contaminated area with large amounts of warm (not Hot!) flowing water. Protect yourself with appropriate safety equipment.
- If the chemical has gotten into the pet's eyes, flush with clean water or sterile saline for 15-20 minutes.
- Do not apply any ointments or butter-like substances.
- Do not apply ice to the burn.
- Carefully transport the animal to your veterinarian! If possible, bring the chemical's container with you.

### Smoke inhalation



Any pet exposed to a fire, particularly a burning building, should be assessed for smoke inhalation. The pet may have:

- Smoke toxicity, with excessive heat damaging the lining of the respiratory tract.
- Inhaled noxious fumes from burning materials such as plastics, rubber, or synthetic materials.
- Carbon monoxide toxicity. Carbon monoxide competes with oxygen on the red blood cells and produces hypoxia (low blood oxygen levels). This can be fatal.

Carefully transport the animal to your veterinarian for evaluation and treatment.

#### Veterinary care

Upon arrival at the veterinary clinic, your veterinarian will assess the extent of the pet's burn (although the full extent of a burn is generally not known for 1-2 days after the incident). The type of burn (1st, 2nd or 3rd degree), the amount of skin involved as well as the location on the body all play a role in determining the patient's prognosis and treatment plan.

A physical exam will be performed to assess the overall health of the pet. Blood will be drawn to evaluate the animal's blood cell counts, electrolyte values and to evaluate the function of his kidneys and liver. Most likely an intravenous catheter will be placed and fluid therapy will be started. Because secondary bacterial infections are common in the burned areas, antibiotic medications are given and an antimicrobial ointment may be applied. Medications for pain are typically given.

Once the full extent of the burn is known, the veterinarian may begin removing the dead tissue on and around the burn. Options such as surgical closure, skin grafts, or second-intention healing (allowing the wound to heal "on its own") will be discussed. Multiple surgical procedures over a number of weeks may be necessary.

The temperature, length of exposure time and the extent of the body involved in the burn are critical factors in determining the patient's prognosis. If greater than 25% of the pet's body is involved, there are usually systemic manifestations including: bacterial infection, shock, kidney failure and anemia. The prognosis is guarded to grave. If greater than 50% of the animal's body is involved in the burn, the prognosis is grave (some authors have suggested if greater than 30% of the animal's body is involved, the prognosis is grave). If the burn involves the face and/or external genitalia, where normal function in these areas will likely not return, the prognosis is also grave.

It is important to realize that burns are very serious injuries. With proper care and patience, they can heal. The resulting wound will be scar tissue without hair. These areas will need to be protected from the sun's rays.

#### Conclusion

Burns and their injuries are extremely serious and require immediate veterinary care. Oftentimes the full extent of the burn is not evident right away. There are also several side effects to burns that will need to be addressed. Of course prevention is always better than treatment. Take steps today to prevent your pet from being burned.