



Auditory Stress: Implications for Kenneled Dog Welfare

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Introduction

Dogs in kennels often are exposed to noise levels known to be stressful to animals. Such levels may negatively impact their welfare. Several studies suggest that prolonged exposure to loud noises can cause hearing impairment or even total loss in humans. Because the auditory systems of humans and dogs are similar, noise levels that damage human hearing may have similar adverse effects on dogs. Despite the similarities, dogs are able to detect sounds ranging in frequency from 40 Hz to 50 kHz, while humans can hear up to only 20 kHz. That suggests dogs may be even more at risk of noise distress than people experiencing the same environments. Exposure to hazardous noise levels can not only cause hearing damage but lead to behavioral and physiological responses, such as a suppressed immune system, insulin resistance, cardiovascular disease and intestinal problems (Coppola et al., 2006). However, few studies have investigated the effects of auditory stress on kenneled dogs.

Sources of noise in kennels

Most noise in dog kennels is produced by dogs. Sales et al. (1997) have reported that the bark of a single dog can reach 100 dB, and recorded sound levels can range between 85 and 122 dB in kennels. Barking by one dog may become a self-reinforcing behavior and may also stimulate other individuals to vocalize further. Additionally, dogs housed in kennels may bark as a territorial behavior or from excitement generated by people passing by the pens. Routine husbandry may also have some effect on barking. For example, dogs that anticipate activities such as the daily arrival of staff may begin to bark around the same time each day in an attempt to solicit food or attention from caretakers.

Another source of noise in kennels is from equipment and husbandry procedures, some of which may be inaudible to people. For example, use of high-pressure water hoses during cleaning will emit sound in the ultrasonic range which may reach 90 dB (Coppola et al., 2006). Other noise-emitting equipment



in the kennel environment includes refrigerators, ventilation systems, temperature regulating systems, and noise made by food and water bowls, as well as doors and nearby motor vehicle traffic.

Negative impacts of high noise levels on people and dogs

Physiological stress responses to noise levels of 100-110 dB have been documented in rodents (Cappert et al., 2000). In humans, hearing loss has been reported at 85 dB; exposure to sounds greater than 90 dB for longer than 8 hours can result in serious hearing damage. Exposure to sounds above 140 dB can cause immediate damage and physical pain. Sound levels ranging from 85-100 dB are common in dog kennels. Exposure to these high levels of sound throughout the day puts both animals and humans at risk for damage to their hearing and may result in decreased quality and quantity of sleep in dogs. An unpleasantly noisy environment can result in reduced reproductive and cardiovascular function, disturbed sleep-wake cycles, or a limited ability to communicate with other dogs (Wells, 2009).

Decreasing kennel noise

Given the risks associated with noise distress, it is important to consider ways to minimize kennel noise. Modifying kennel management procedures or incorporating sound control into construction of new buildings are among several ways of doing so. Reducing the number of interruptions in the kennel and setting a regular care schedule may decrease barking. Replacing squeaky kennel doors and loud overhead fans, and using quieter cleaning equipment may all help to decrease the level of noise within the facility. Another intervention, if budgets allow, is the use of sound absorbing materials. Materials such as concrete block walls and floors, and metal or hard ceilings do not absorb noise but, instead, reflect it. Because these materials are routinely used in kennels, noise abatement, when not cost prohibitive, should be considered. Sound-dampening materials that can be incorporated into kennel design include noise abatement paneling, hanging baffling and sound clips. Because incorporating such materials can be impractical and costly, in newer facility designs, self-contained rooms may be incorporated as an alternative to traditional kennels and runs as a means of reducing noise. Such rooms typically are enclosed within a larger area with the noise absorbed and contained within the smaller rooms. Additionally, dogs can be housed in groups within these self-contained rooms, which has been shown to decrease noise caused by vocalization and increase the time spent sleeping (Coppola et al., 2006). However, for many facilities, such as high-volume or low-resource shelters or kennels, self-contained rooms may not be feasible due to their relatively high costs and impracticality for housing large numbers of dogs.



Using environmental enrichment for noise abatement

Environmental enrichment can provide an effective intervention to decrease barking and, therefore, lower kennel noise. Auditory enrichment programs have been used to decrease barking in kennels. The demonstrated benefits of auditory stimulation have led to the development of music selections created specifically to enhance companion animal well-being. For example, playing classical music in a kennel can promote restful behaviors often associated with reduced stress levels, thereby reducing some of the negative aspects of the kennel environment at relatively minimal cost and effort (Kogan et al., 2012). In addition, the music may have a positive effect on human caretakers by creating a more relaxing work environment. The use of radio broadcasts has also been shown to have beneficial effects on captive animals by masking distracting noises (Wells, 2009). More recently, commercially available psycho-acoustically designed classical music CDs, such as “Through a Dog’s Ear,” have become popular for use in various companion animal environments. Use of these albums in shelters, clinics, and home settings have been proven to help calm dogs with anxiety (Leeds and Wagner, 2005).

Another type of enrichment that may reduce barking is olfactory enrichment. For example, Dog Appeasement Pheromone (DAP), a synthetic version of a pheromone that is produced by bitches shortly after whelping, has a calming effect on newborn puppies and has been found to decrease problem behaviors in dogs. Wells (2009) reported that dogs in shelters decreased barking after being exposed to DAP for

seven days. DAP is commercially available as a collar, diffuser or spray. The use of essential oils and other plant-based odors has also been found to have beneficial effects on animals that may lead to reduced noise. Lavender and chamomile have been shown to decrease activity and vocalizations that are indicative of relaxation in shelter dogs (Wells, 2009). Scented cloths and diffusers can be used to reduce barking and other activities that result from over-excitement or distress in kenneled dogs.

Conclusions

Auditory stress for kenneled dogs is a serious welfare concern that requires more investigation. An unpleasantly noisy environment can result in altered immune function, disturbed sleep-wake cycles, and possibly, hearing damage or loss to dogs and people. Therefore, it is important to monitor and reduce noise levels in kennels. Sound monitoring equipment is available to determine the level of environmental noise, but can be expensive. However, sound detector apps now available on cellphones may provide a cost-effective and practical way to monitor the intensity of sounds in the kennels. For kennels that are found to be excessively noisy, there are several ways to improve the auditory environment at relatively low cost, time and effort. Attending to noise levels in kennels and reducing the auditory stress that kenneled dogs experience may help to create a more positive environment that results in better health and welfare outcomes for dogs as well as people.

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