

**FIGURE 6-11** Hearing protectors should always be used in noisy kennels.

110 dB. Although relatively short-duration exposure to these noise levels, such as going into the kennel just to retrieve a patient, poses no serious damage to your hearing, chronic or long-term exposure can contribute to hearing loss. When working in noisy areas for extended periods of time (e.g., cleaning of cages), you must wear personal hearing protectors (Figure 6-11). It does not matter what style or type of hearing protectors you use (earplugs or muffs), as long as they are rated to filter the noise by at least 20 dB (the package will indicate the rating).

**TECHNICIAN NOTE** Dogs in cages will inevitably bark, and barking dogs can adversely affect your hearing, especially if you work in an indoor kennel. Noise levels in dog wards can reach as high as 110 dB.

## BATHING, DIPPING, AND SPRAYING AREAS

There is probably no area of an animal hospital with a greater risk for injury than in the bathing or insecticide application areas. Although newer parasite control products significantly reduce exposure to pesticides and insecticides, shampoos and medical dips are still a big concern.

The products used for bathing and dipping animals can be harmful to your health and the environment. Even the “all natural” shampoos can cause eye irritation, and you can develop sensitivities to even the mildest products if you are exposed often enough. Because it is impossible to prevent splashing and shaking, it is important to always wear protective glasses or goggles when bathing or dipping animals. In most cases, it is also important to wear gloves and a protective apron to prevent the product from getting on your skin or clothing; this minimizes the amount absorbed through the skin.

Bottles of dips, shampoos, and insecticides should be stored in a cabinet at or below eye level. The bottle should be properly labeled with the contents and any hazard warning that is appropriate (refer to the discussion on chemicals in this chapter for more details). Always replace the cap or lid on the container when you are finished using it to prevent

accidental spillage. Plastic containers recycled from other areas can be used for diluted shampoos and dips; however, only use the ones that have a screw-on cap or lid.

Always use a ventilation fan to keep the fumes from shampoos and dips at a safe level. When exhaust fans are too large, they waste heating or air conditioning, so you may be hesitant to use them in some situations. If that is the case, ask your hospital administrator to have a smaller fan installed directly over the tub or area so that fumes can be exhausted without sacrificing the comfort in the room.

Make sure you know where the eyewash station for this area is located. Learn how to properly use the eyewash device before it is needed. If you ever splash a chemical in your eyes, do not rub your eyes with your hands. Immediately call out for help; there is usually someone nearby. With a co-worker’s assistance, go to the eyewash station and flush both eyes (even if only one eye is affected). Avoid using the spray attachments for tubs and sinks since the water pressure is unregulated and the streams of water from these devices can be fine enough to lacerate your cornea.

## ZOONOTIC DISEASES

Infectious diseases that can be passed from animals to humans are known as zoonotic diseases. Some zoonotic diseases are not easily transmitted from animals to humans, whereas others are easily spread. You can be exposed to the organisms that cause disease by several means: inhalation, contact with broken skin, ingestion, contact with eyes and mucous membranes, and via accidental inoculation by a needle. There is a wide variety of zoonotic agents to which a veterinary technician may be exposed, certainly more than can be discussed in this chapter. However, some important ones are listed below.

### Viral Infections

**Rabies** is a serious (almost always fatal) viral disease that can affect any warm-blooded animal (including humans). The virus is spread by contact with an infected animal’s saliva. Usually the virus is transmitted through a bite, but it has also been transmitted by open wounds or mucous membranes coming in contact with virus-rich saliva.

Although the disease is ever present in wild animal populations (primarily bats, raccoons, and skunks in the United States), in recent years many states have confirmed record high numbers of rabies in domestic species, such as cats, dogs, horses, and cattle. Several university veterinary hospitals have also recorded cases of rabies in horses, cattle, and companion animals. Some of those animals were even adopted from pet shops. Although rare, it is possible that you will encounter a rabid pet at the veterinary hospital where you work.

It is important that you are aware of the prevalence of rabies and the incidence among wild species in your area because it varies in each region of the country. If you work in a high-risk environment, such as with unvaccinated, stray, and homeless animals in a shelter or with wild animals at a rehabilitation

center, you should be immunized with preexposure prophylaxis. Ask your hospital administrator about the availability of these vaccines. They are often available through the occupational health divisions of regional human hospitals. When you must handle an unvaccinated, wild, or stray animal, wear protective (rubber or latex) gloves and wear protective gowns and goggles in cases where the procedure may be “messy.”

### Bacterial Infections

There is a wide variety of both pathogenic and nonpathogenic bacteria that you may be exposed to during your professional life. Some examples of pathogenic bacteria include *Salmonella* spp., *Pasteurella* spp., *E. coli*, and *Pseudomonas* spp. Bacteria can be transferred by direct contact with the animals and their exudates. This is particularly likely if you have any cuts or open sores. Some bacteria may be aerosolized and inhaled or absorbed through mucous membranes. The best protection against exposure to bacteria is simply good personal hygiene. Always follow the personal hygiene rules discussed later in this chapter.

### Lyme Disease

Recently, **Lyme disease** has become a more serious concern for animals and people. When an infected deer tick bites a host (an animal or person) to feed, the bacteria *Borrelia burgdorferi* is transferred to the host. Lyme disease in humans is characterized by aches in the joints, fever, and a host of other flulike symptoms. The best defense against this disease is to check yourself daily for ticks and remove them promptly. If you work in a food- or mixed-animal practice, it is also a good idea to use an insect repellent when you go out into fields or woods to work.

### Fungal Infections

Contrary to its name, **ringworm** is not a parasite or worm. It is an infection of the skin caused by a fungus known as *Microsporum* sp. Ringworm is passed between animals and humans. Cats and horses are particularly susceptible to ringworm infestations. The most effective protection from ringworm infection is to wear gloves when handling or treating animals diagnosed with the condition and to practice good personal hygiene. Be especially careful about preventing contamination of your clothing when treating patients with *Microsporum* sp. because it is believed that the fungal spores can be carried to other locations (such as your home) on clothing and infect other animals or other people.

### Internal Parasites

When the eggs of common internal parasites, such as roundworms, infect humans, they usually do not mature into adult parasites, but they do cause other problems. Roundworm larvae can migrate to virtually any organ in the body and develop into a cystlike growth known as **visceral larval migrans**. These “cysts” are usually not clinically noticeable unless they develop in a vital organ such as the eye where they can do permanent damage to the retina and may cause blindness. Puppies almost always have some level of roundworm

infestation because the passage of worms from the bitch to the fetus occurs through the placenta and via lactation. When the infected puppy defecates in soil, the roundworm eggs are able to survive for long periods of time until they are picked up and ingested by another mammal.

Another common internal parasite, hookworms, can also cause problems in humans by a condition known as **cutaneous larval migrans**. This condition is particularly prevalent in southern areas of the United States where there are warm, humid winters. Children who play barefoot where pets defecate frequently may be affected in addition to people who lie on the ground where dogs have defecated. Unlike the visceral cysts from roundworms, the cutaneous larval migrans are relatively easy to spot and appear as small, red lines in the regions where the parasite has burrowed into the skin from the soil. Often these marks are itchy and lengthen as the parasite moves from one part of the body to another, subcutaneously.

### External Parasites

The irritating and itchy mite that causes **sarcoptic mange** can spread easily to humans from animals. Typically, this occurs in regions where there is tight clothing, such as along bra lines and waistbands. When treating animal patients for mange, always wear gloves and a protective gown and wash your hands thoroughly with disinfecting soap immediately after the procedure.

### Protozoal Infections

Infestation with a protozoan known as *Toxoplasma gondii* is called **toxoplasmosis**. Although it is usually not harmful to most adults, it can have devastating effects on the development of a human fetus by causing hydrocephalus and mental retardation. Nonsporulated *Toxoplasma* eggs are shed in the feces of infected cats. The eggs subsequently sporulate approximately 2 to 4 days later. These 3-day-old, sporulated oocysts—if ingested by some pregnant women—are particularly dangerous to the fetus. Pregnant women can avoid potential exposure to *Toxoplasma* by taking the following steps:

1. Avoid cleaning cat litter pans when possible, particularly those that contain feces older than 2 days. If it is unavoidable, be sure to wear gloves when handling the litter box and wash your hands when you are finished.
2. Wash raw vegetables thoroughly (dirt on vegetables may contain oocytes).
3. Do not eat raw or uncooked meat, particularly lamb and pork, which can carry the encysted protozoan in the muscle tissue. Cook all meat thoroughly.
4. When gardening, wear gloves that can be removed easily. Under no circumstances should dirt accidentally enter your mouth (e.g., when removing a hair from your mouth).
5. Women in the veterinary profession are encouraged to have *Toxoplasma* titers evaluated before becoming pregnant, if at all possible. Your physician can give you more specific advice about *Toxoplasma* titers during your pregnancy.

Other zoonotic protozoal agents, such as *Giardia* and *coccidia*, cause diarrhea and gastrointestinal cramping in humans. These are typically spread to people from their contact with infected animals (particularly puppies and kittens), but they can also be acquired by drinking contaminated water.

Because you will probably come in contact with some of these diseases in your job, particular attention to personal hygiene and sanitary work practices is essential. Good personal hygiene includes making sure your clothes do not become soiled by chemicals or biologic material and, of course, regular hand washing. In general, you should wash your hands:

1. After handling medications or lab samples
2. After treating patients or cleaning cages
3. Before and after you use the restroom
4. Before lunch or meal breaks and before you leave work at the end of your shift



### NONZOOONOTIC DISEASES

Some infectious agents, such as **parvoviral enteritis** in dogs and **panleukopenia** in cats, are not a serious concern to human health, but they are so highly contagious that you can carry the live virus home to your pets on your clothes and shoes. For this reason, some technicians when working with parvoviral cases at work leave their shoes outside their front door and change their clothes immediately upon entering their home, and some even change clothes before they leave the hospital. In addition, technicians who work with cats that have certain viral upper respiratory conditions and chlamydia can themselves contract pinkeye or conjunctivitis. Therefore when treating cases with contagious diseases, be sure to wear a protective apron, surgical mask, examination gloves, and, when appropriate, eye protection. Thoroughly wash your hands with a disinfecting agent, such as chlorhexidine or povidone-iodine scrub, at the completion of the treatment and change your clothes before handling your own animals.



**FIGURE 6-12** Always wear eye protection, a mask, and gloves when performing dental prophylactic procedures.

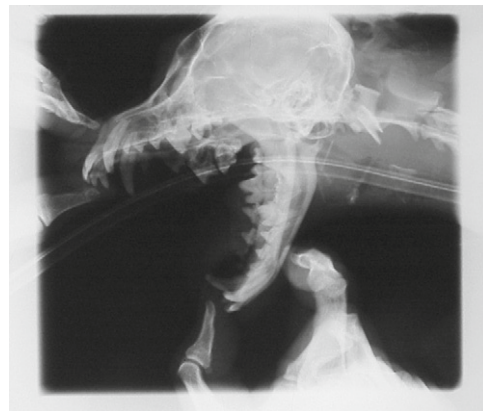
### A DIRTY MOUTH? PRECAUTIONS FOR DENTISTRY OPERATIONS

Dental procedures that include use of a high-speed and ultrasonic scaler aerosolize oral microbes, making personal protection a necessity. One of the most common pathogens in the mouths of animals is *Pasteurella multocida*, an organism that has been linked to cardiac and pulmonary problems in humans and animals alike. Therefore when performing dental procedures, be sure to wear goggles, gloves, and a surgical mask (Figure 6-12).

### RADIOLOGY

The ability to “see inside the body” is a great tool in medicine. In most cases, the method of choice is diagnostic radiography (x-rays). Short-duration, infrequent exposure to radiation, such as having radiographs taken of yourself, is considered an acceptable level of exposure (the benefits outweigh the risks). However, long-term exposure to low doses of radiation has been linked to many medical disorders. High-dose exposure can cause skin changes, cell damage, and gastrointestinal and bone marrow disorders that can be fatal. Fortunately, much is known about the properties of x-rays, and we are clear about the ways in which we need to protect ourselves. By following some simple safety precautions, you can safely use radiography in your practice.

Although modern radiographic machines have many safeguards integrated in their design, there is still the possibility of injury if these tools are used incorrectly. When you are taking x-rays, always wear a lead apron and lead gloves. Lead thyroid collars and lead glasses are also recommended, particularly during extensive studies, such as with fluoroscopy. Though restraint of animals during radiographic studies can be challenging, never place any part of your body, even a gloved hand, in the primary beam (Figure 6-13).



**FIGURE 6-13** Never place your hand or any other part of your body in the primary beam when taking radiographs.