

WOHRC FACT SHEET

WOMEN'S OCCUPATIONAL HEALTH RESOURCE CENTER



WORKING WITH ANIMALS

There are a myriad of jobs involving contact with birds, fish or animals, large and small. Although working with animals seems less threatening than working in a coal

mine or with chemicals, the reality is that contact with the animal kingdom has the potential for health risks. Here we examine these rather special occupational hazards.

One doesn't have to be a lion tamer or an underwater scientist studying sharks to be a candidate for possible health risks because of a job involving animals. The county dog catcher, workers who clean cages in laboratories, agricultural workers, men and women who fish for a living and even a food handler making sausage with meat from an infected hog are among those who encounter very real hazards because of contact, whether direct or indirect, with the animal world.

While a lot of attention is paid to the safety of the lion tamer or shark watcher, there is very little clamor about the safety of people doing more mundane work with animals. Nonetheless, debilitating allergic or immunological reactions, the danger of exposure to infectious agents or anesthetic gases, physical injury such as bites and muscle strain and job stress are part of the picture.

Adverse Reactions

Working with animals often entails exposure to organic matter which can set off allergic or immunological reactions. This is somewhat different from more familiar occupational health situations. For example, a coal miner may develop a respiratory ailment that is the lung's response to an irritant, coal crystals, whereas, a snow crab processor who develops asthma is displaying an allergic response to organic matter. In the fishery industry, occupational asthma has been documented in oyster, prawn and fish-processing workers and this year, a study from Quebec showed, "a highly significant correlation between a positive skin test to crab extracts... and occupational asthma, rhinitis and/or skin rash at work..."

Since the development of confinement rearing of animals, human beings are

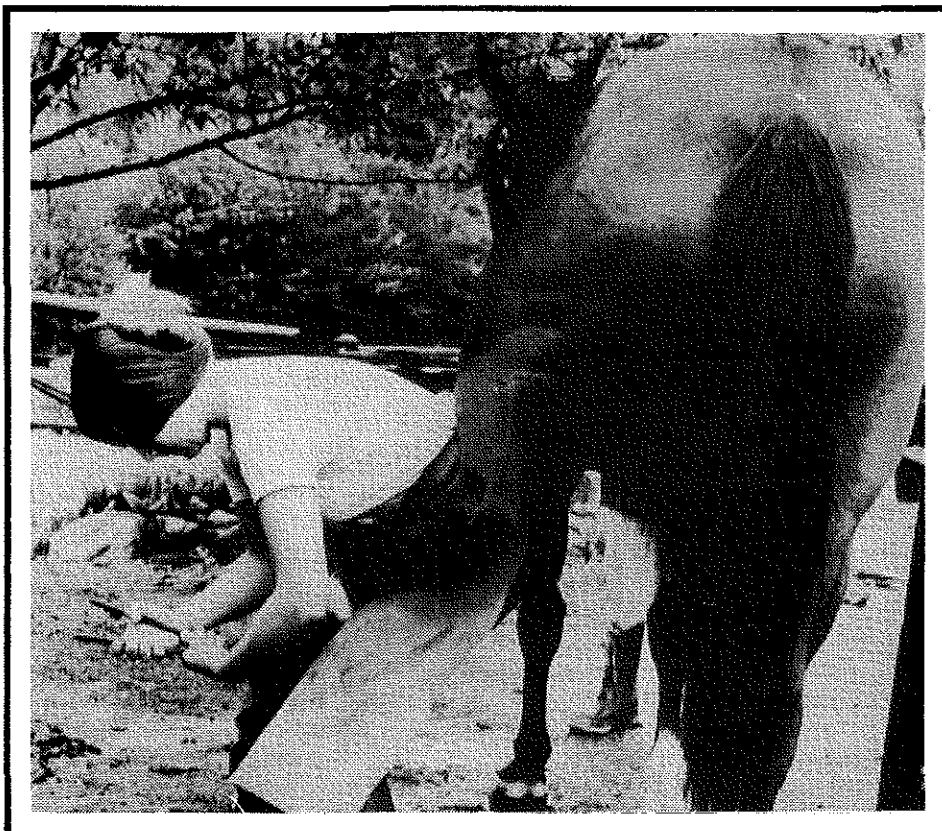
being exposed to massive amounts of organic matter. For example, in the last ten years, there has been a surge in confinement rearing of swine. It's estimated that some 500,000 people are involved in tending swine in a closed work environment. Earlier this year a team of researchers in Iowa reported what they consider, "an emerging occupational health hazard" associated with such work.

Based on reports from workers complaining of bronchitic symptoms as well as symptoms consistent with asthma, hypersensitivity pneumonitis, airway obstruction and acute respiratory distress, the scientific team studied pulmonary function among such workers before and after a four-hour work shift and compared their lung functioning with office workers or students with no prior exposure who were put into the work atmosphere for the purposes of the study. The air in the swine confinement area also was analysed for contaminants such as particles and gases which were confirmed.

The study found declines in lung function in both groups but the decrements were more pronounced in the swine workers.

There are some other facts to keep in mind in considering adverse effects resulting from exposure to animals. The first is the fact that even when damage is not obvious—and some ill effects can take a long time to develop—the body is reacting. For example, a study done in Denmark showed antibodies to hen and duck antigens in poultry workers. In silence, these workers' immunological systems were setting up a defense reactions to a threat.

People also differ in their reactions. For example, a bee sting that might cause one person pain and swelling might lead to extreme reactions in another person. For example, a study done in Ohio, suggested a cause-and-effect relationship between the development of neurological symptoms including seizures and insect stings.



Another point to keep in mind is the fact that some workers who deal with animals are vulnerable to combined adverse effects because of their occupational environment. For example, on the farm there are a host of potential hazards—pollens, animal dander, grain dust, mold spores, inorganic dusts, ammonia fertilizers, insecticides, herbicides, motor fuels and nitrogen oxides and putrefactive gases. These multiple insults lead to the fact that in general, farmers are more likely than other occupational groups to suffer respiratory conditions.

Dangerous Exposures

Exposures to waste anesthetic gases and vapors and the potential for contracting zoonotic (animal-to-human) disease are very real hazards facing those who work with animals.

In recent years evidence of ill effects from waste anesthetic gases—headache, nausea, renal and hepatic disorders, cancer, behavioral change, reproductive effects—has accumulated in data from different occupations. NIOSH estimates that some 50,000 veterinarians and their assistants are routinely exposed to waste anesthetics.

Zoonotic disease is a very real hazard for those who work with animals no matter what the setting or how unorthodox the pattern of transmission.

For example, Q fever is a disease of people who work in contact with such livestock as cattle, goats and sheep—agricultural workers. Recently, the Canadian Medical Association Journal reported a study prompted by the fact that Q fever had become endemic in the province of Ontario. Instead of concentrating on farm workers, the investigators focused on personnel at a research institute where sheep were used for perinatal studies. The investigators were able to document an outbreak of Q fever which, despite considerable illness—Q fever resembles the flu—went undetected in a hospital!

In another study, one done by the Bacterial Diseases Division of the Centers for Disease Control, it was noted that an outbreak of *Salmonella heidelberg* among infants in a hospital nursery could be traced to a woman who had contact with infected calves while she was pregnant. The woman transmitted the infection at birth to her own baby who passed it along to its companions in the nursery.

Even if a particular animal is not ill or a particularly effective “reservoir” for an infectious agent, transmission can occur. For example, people can contract spotted

fever in the seemingly helpful and harmless act of de-ticking their dogs. Ticks may be crushed and the fingers may become contaminated. Infections through abrasions in the skin or rubbing the eyes have been known to occur in humans.

NIH Program

Since animal research is so vital a part of worldwide scientific effort, and exposure to infectious agents is part of the job, it's useful to look at the Animal Handlers Medical Surveillance Program in force at the National Institutes of Health in the Washington D.C. metropolitan area. Devised over the last several years by the Occupational Medical Service, Division of Safety, and the Veterinary Resources Branch, Division of Research Services to protect employees as well as to protect an estimated population of some 4,200 animals—everything from dogs to chimpanzees—from diseases carried by humans, the program is quite complex and involves several stages. For humans this means careful pre-employment examinations, immunizations, follow-up monitoring and, if needed, care for work-related acute illness and injuries. For many of the animals—large research animals and selected rodents and rabbits—it means quarantine to reduce the risk of zoonotic diseases such as tuberculosis, rabies, salmonellosis.

High Risk Groups

There are an estimated 10,000 animal control officers in the U.S. While it is their work which contributes much to public health, little attention is paid to the hazards they themselves face. This fact led to a study in New Mexico reported this year in the American Journal of Public Health. One hundred and two full-time animal control officers were contacted. About one-fourth of them were women. These were people used to dealing with such animals as dogs, cats, bats, skunks, raccoons, foxes, mice and rats among others.

The animal control officers were found to be at a clear increased risk of animal bites.

According to the researchers, extrapolation of this data suggests that each year over 50,000 animal bites might occur to full-time animal control officers in this country. They conclude, “assessments of animal control personnel bite experience, including rabies exposures, should be performed in other areas.”

Rabies is of course a significant hazard in work involving animals. It is important therefore to note that in a study reported in “The Lancet” last spring, human diploid cell vaccine, whether given intramuscularly or by automatic intradermal

jet injection, failed to produce antibody levels predicted by earlier studies. This finding is of interest because human diploid cell vaccine is more immunogenic and significantly less toxic than earlier rabies vaccines.

While the health risk to veterinarians is scarcely a new subject, the familiarity of danger can lead to forms of denial or mistaken diagnosis. For example in a case reported this year in California, a veterinarian thought he was suffering from flu and failed to seek treatment. He actually was suffering from bubonic plague. Not only were his chances for survival reduced by his delay, nearly sixty people with whom he had face-to-face contact were in danger. Awareness of risk is clearly one of the requisites of working with animals! □

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