

## Occupational Health Program for Personnel Exposed to Vertebrate Animals East Tennessee State University

### Toxoplasmosis

**Reservoir:** *Toxoplasma gondii* is a coccidian parasite with a worldwide distribution among warm-blooded animals. Wild and domestic felines are the only definitive hosts of this organism. They are infected by one another or through an intermediate host. Both sexual and asexual reproductive cycles occur in the gastro-intestinal tract of felines and oocysts are shed in the feces. In all other hosts (intermediate hosts) the parasite is an obligate intracellular parasite. Oocysts in the cat feces become infective after sporulation, which occurs in two (2) to three (3) days. Under appropriate environmental conditions, oocysts passed in cat feces can remain infective for a year or more. Serological surveys have indicated that up to 80% of cats have evidence of the infection. There is no practical, simple test to determine which cat may be shedding the organism. Therefore, one should consider all cats to be a potential threat to humans, especially to pregnant women.

**Mode of Transmission:** Intermediate hosts, including humans, can contract the infection from oocysts, which are present only in materials contaminated by cat feces, or by ingesting infectious cysts in raw or undercooked meat or transplacentally in utero. Human infection from improper handling of tissue from an infected intermediate host in the laboratory should be considered a remote possibility.

**Clinical Signs:** In most cases toxoplasmosis produces an asymptomatic or mild infection with fever, myalgia, arthralgia, lymphadenopathy, and sore throat, mimicking infectious mononucleosis in some individuals. *Toxoplasma* infection can have severe consequences in pregnant women and immunologically impaired people. In a pregnant woman with a primary infection, rapidly dividing tachyzoites can circulate in the bloodstream and produce a transplacental infection of the fetus. In early pregnancy, the fetal infection can result in death of the fetus or chorioretinitis, severe brain damage, fever, jaundice, rash, and convulsions at birth or shortly thereafter. Fetal infection during late gestation can result in mild or subclinical disease with delayed manifestations, such as recurrent or chronic chorioretinitis. Infection in immunosuppressed people can be characterized by maculopapular rash,

pneumonia, skeletal myopathy, myocarditis, encephalitis and death.

**Diagnosis and Prevention:** Toxoplasmosis can be diagnosed by finding the organism in clinical specimens, isolating it in an animal or cell culture, or demonstrating rising serum antibody titers. There is no vaccine to protect humans from this parasitic infection. In a laboratory animal facility the control of infection of this zoonosis is centered principally around the management of cats and their waste. Although many other laboratory animals could serve as intermediate hosts and harbor *T. gondii* in extra-intestinal sites, they have not proved to be important sources of zoonotic transmission in the laboratory environment. Personnel should practice appropriate personal hygiene practices and maintain rigorous sanitation in an animal facility to prevent exposure to *Toxoplasma*. Cat feces and litter should be disposed of daily to prevent sporocysts from becoming infectious, gloves should be worn when handling waste from cats or other potentially infective material, and hands should be washed before eating.

**Remember: Unless they are known to have antibodies to *Toxoplasma*, pregnant women or those planning a pregnancy should be advised of the risk involved with exposure to cats since contraction of toxoplasmosis could seriously affect the fetus during early stages of development.**

**All women of childbearing capacity who are working with cats through their employment at ETSU and who have not had a positive *Toxoplasma* antibody test should have their *Toxoplasma* titer checked once a year. ETSU Family Medicine Associates can provide this test and the respective department will be charged for the cost. Contact the Division of Laboratory Animal Resources at extension 9-6292 for more information.**

**References:** Occupational Health and Safety in the Care and Use of Research Animals. National Research Council. National Academy Press 1997. ISBN 309-05299-8  
Toxoplasmosis, CDC Fact Sheet:  
[http://www.cdc.gov/ncidod/dpd/parasites/toxoplasmosis/factsheet\\_toxoplasmosis.htm](http://www.cdc.gov/ncidod/dpd/parasites/toxoplasmosis/factsheet_toxoplasmosis.htm)

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