

# Workplace Health and Safety Bulletin



## Guideline for Prevention of Brucellosis in Meat Packing Plant Workers

### Introduction

Brucellosis is a disease which may spread from animals to man. There is no evidence for person to person transmission. The last outbreak of Brucellosis in Alberta occurred in 1979. An investigation of that outbreak led to recommendations which are incorporated in this guideline. Presently, cases of Brucellosis are very rare in Alberta and Canada is now considered Brucellosis free. However, safeguards should still be kept in place since there are two potential sources of re-infection in Alberta:

- (1) Bison from the Wood Buffalo area; and
- (2) Imported cattle, especially from the U.S.A. which is not yet considered Brucellosis free.

When cases are reported by physicians they occur mainly among livestock producers, meat processing workers and occasionally veterinarians. For this reason prevention focuses on work practices and good personal hygiene at work.

### Mode of transmission

Brucellosis may be transmitted from infected animals during handling or slaughter in three ways; contact, ingestion and/or inhalation.

*Contact* transmission may occur when broken skin contacts freshly killed meat, or when mucous membranes, such as lips, nose or conjunctiva of the eye are contaminated with aerosols or droplets of animal tissue fluids.

Infection by *ingestion* may occur by drinking raw milk, or eating undercooked meat and dairy products (cheese) from infected animals. In a packing plant, nail biting and eating or smoking with hands contaminated by animal fluids are the main sources of infection by ingestion.

*Airborne* transmission may occur when aerosols containing brucella organisms are inhaled.

## Major symptoms

The signs and symptoms reported by those affected are fever, chills, joint pains, sweats, body aches, weakness, weight loss, headache, loss of appetite and depression.

## Work practices

Federal guidelines require that all breeding age female cattle are tested at auctions and slaughter houses. Dairy cows are also tested annually. Animals that are found to be seropositive\* are given an ear or black tag which makes them easy to distinguish.

*\*Cattle having a positive blood agglutination or milk ring test for Brucella abortus.*

Studies<sup>1,2</sup> have shown that the risk of infection to workers increases with the concentration of brucella organisms present at the work site. For these reasons we recommend that:

- The number of seropositive cattle slaughtered daily should be limited to 20-25. It appears that below this number, the concentration of brucella organisms is low enough so that worker infection is less likely to occur.
- Cattle from Brucellosis infected herds should be slaughtered at the end of the kill, in order to reduce the presence of brucella organism during the rest of the work shift.

- One carcass space should be left between each seropositive animal, since this appears to be effective in reducing the aerosol concentration.
- Manual handling of remains of seropositive cattle being removed to the rendering area should be minimized.
- Manual handling of fetuses from seropositive cattle or other cattle from the same herd should be minimized. Uteri should be removed in their entirety and not opened before being removed to the rendering area.
- The mammary glands (udders) should be removed without cutting into them, leaving the supramammary lymph nodes intact and uncut.
- When slaughtering seropositive or other cattle from the same herd, workers on the kill floor who are at high risk of being splashed or inhaling droplets should wear goggles or safety glasses with side shields and respiratory protection suitable for preventing aerosol inhalation.
- The Federal Government Health of Animals Procedures for Handling of Reactors Under Herd Disease Eradication Program (Circular 34) should be strictly adhered to.

## Personal hygiene

To avoid transmission through ingestion:

- No eating, drinking or smoking should be permitted in the work area.
- Workers should thoroughly wash their hands with soap and water before leaving the work area.

## First aid

In addition to the requirements of the Alberta *Occupational Health and Safety Code*, Part 11 First Aid:

- First aid supplies should be located in an area that can be reached easily and quickly in case of accident.
- Eye wash equipment should be stationed in suitable locations to ensure prompt treatment for splashed and spills.
- Animal blood, excreta or other tissue fluids splashed in the face should be rinsed immediately with large amounts of water. In the case of eye injuries or burns, medical attention should be obtained.
- Knife cuts, bone cuts, punctures, abrasions and scratches should be reported and first aid administered as soon as practicable. However, when seropositive cattle are being slaughtered, first aid must be administered immediately, even if the injury appears to be minor.
- Open wounds should be thoroughly cleansed and an antiseptic and a suitable waterproof dressing applied. In very wet areas, rubber gloves should be used to ensure that the dressing remains dry.

## Worker education

When beginning employment, new employees should be informed about:

- Brucella organism as a possible workplace health hazard.
- The use of, and reason for, items of protective equipment.
- The benefit of immediate first aid.
- The typical symptoms of Brucellosis.

- The reasons for blood tests at the time of employment and following the development of symptoms suggestive of Brucellosis.
- The importance of personal hygiene and the necessity for prohibiting eating, drinking and smoking on the kill floor.
- The jobs identified as high risk when slaughtering seropositive cattle.

## Medical surveillance

- (a) At preplacement health screening, any worker who may be involved in the slaughtering process should have a blood sample taken for serological examination for Brucellosis, to determine current serological status. A record of this serological test would help to identify seroconversions and assist in the diagnosis if a worker develops signs or symptoms of Brucellosis in the future.
- (b) A worker who develops symptoms suggestive of Brucellosis should seek medical care and have a blood sample taken for serological examination.
- (c) Since Brucellosis is a notifiable disease, all cases that are confirmed must be reported to the Director of the nearest Health Unit. When contact with the Director of the nearest Health Unit is not possible, contact the Director of Communicable Disease Control and Epidemiology.

## Serological test and its interpretation

At least 10 ml of clotted blood is required for analysis by laboratories which perform serological tests for Brucellosis. Any worker with an agglutination titre equal to 1:160 or greater and with symptoms associated with Brucellosis is classified as a presumptive case<sup>3</sup>. A case is confirmed when the brucella organism is found on bacteriological culture from a blood sample.

## Treatment

Treatment of Brucellosis in humans includes antimicrobial therapy and supportive measures.

## References

- 📖 Buchanan, R.M. and Hendricks, S.L. et al., *Brucellosis in the United States 1960-1972: An Abattoir-Associated Disease*, Part III: Epidemiology and Evidence for Acquired Immunity. *Medicine*, 53:427-441, 1974.
  - 📖 Alleyne, B.C., Orford, R.R., Lacey, B.A. and White, F.M.M., *Rate of Slaughter May Increase Risk of Human Brucellosis in a Meat Packing Plant*, *JOM*, Vol. 28, No. 6:445-450, 1986.
  - 📖 HEW Publication No. (CDC) 79-8196, *Annual Summary 1978*, U.S. Dept. of Health, Education and Welfare. Public Health Service.
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