

Section 1 - Infectious Agent

Agent Name: *Geobacillus stearothermophilus*

Agent Type: Bacteria

Taxonomy:

Family: Bacillaceae

Genus: *Geobacillus*

Species: *G. stearothermophilus*

Subspecies/Strain/Clonal Isolate:

Synonym/Cross Reference

Characteristics

Brief Description: *Geobacillus stearothermophilus* is a Gram-positive thermophilic (heat loving) bacteria characterized by a inner cell membrane and a thick cell wall. *G. stearothermophilus* is a rod shaped anaerob found in thermophilic habitats like thermal vents.

Properties: Not pathogenic

Section 2 - Hazard Identification

Pathogenicity/Toxicity

No pathogenic strains of *Geobacillus stearothermophilus* have been found so far.

Predisposing Factors: None.

Communicability

Not applicable

Epidemiology

World-wide distribution. These bacteria have been isolated from sources on all seven continents as well as the Pacific Ocean and the Mediterranean Sea.

Host Range

Natural Host(s): None.

Other Host(s): Not applicable

Infectious Dose

Not applicable

Incubation Period

Not applicable

Section 3 - Dissemination

Reservoir

Found in thermal springs on all 7 continents and the Pacific Ocean and Mediterranean Sea.

Vectors

None.

Zoonosis / Reverse Zoonosis

None.

Section 4 - Dissemination

Drug Susceptibility

Not applicable

Drug Resistance

Not applicable

Susceptibility to Disinfectants

Gram positive bacteria are generally susceptible to a number of disinfectants, including phenolic compounds, hypochlorites (1% sodium hypochlorite), alcohols (70% ethanol), formaldehyde (18.5 g/L; 5% formalin in water), glutaraldehyde, iodines (0.075 g/L).

Physical Inactivation

Bacteria are generally sensitive to moist heat. *Geobacillus stearothermophilus* spores are thermally adapted to high temperatures of >80 degrees C up to 105 degrees C. Physical inactivation is achieved by saturated steam and temperatures greater than 105 degrees C.

Survival Outside Host

Geobacillus stearothermophilus spores are ubiquitous in the environment (water, land and air) and are adapted to survive for long periods in the environment.

Section 5 - First Aid and Medical

Surveillance

Does not cause disease

First Aid / Treatment

Not applicable

Immunization

Not applicable

Prophylaxis

Not applicable

Section 6 - Laboratory Hazards

Laboratory Acquired Infections

None reported.

Sources / Specimens

Not applicable

Primary Hazards

None.

Special Hazards

None.

Section 7 - Exposure Controls and Personal Protection

Risk Group Classification

What is the Risk Group classification in humans and animals for the pathogen?

Human Risk Group Classification RG1

Animal Risk Group Classification RG1

Containment Requirements

Containment Level: CL1

Containment Zone Requirements:

Containment Level 1 facilities, equipment, and operational practices for work involving infectious or potentially infectious materials, animals, or cultures.

Protective Clothing

Lab coat. Gloves when direct skin contact with infected materials or animals is unavoidable. Eye protection must be used where there is a known or potential risk of exposure to splashes.

If there are no special hazards for this agent enter "none".

Other Precautions

All procedures that may produce aerosols, or involve high concentrations or large volumes should be conducted in a biological safety cabinet (BSC). The use of needles, syringes, and other sharp objects should be strictly limited. Additional precautions should be considered with work involving animals or large scale activities.

Section 8 - Handling and Storage

Spills

Allow aerosols to settle. Wearing protective clothing, gently cover the spill with absorbent paper towel and apply suitable disinfectant, starting at the perimeter and working towards the centre. Allow sufficient contact time before clean up.

Disposal

Decontaminate all wastes that contain or have come in contact with the infectious organism by autoclave, chemical disinfection, gamma irradiation, or incineration before disposing.

Storage

The infectious agent should be stored in appropriately labelled leak-proof containers in a locked area. Containers of infectious material or toxins stored outside the containment zone must be labelled, leakproof, impact resistant, and kept either in locked storage equipment or within an area with limited access.

Section 9 - Regulatory Information

The import, transport, and use of pathogens in Canada is regulated under many regulatory bodies, including the Public Health Agency of Canada, Health Canada, Canadian Food Inspection Agency, Environment Canada, and Transport Canada. Users are responsible for ensuring they are compliant with all relevant acts, regulations, guidelines, and standards.

PSDS Creation Date: Jan 22, 2018

Revision Number:

PSDS Revision Date:

Revisions were made to Sections:

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References

Risk Group determination from "PHAC Biological Agent Search".