MATERIAL SAFETY DATA SHEET - INFECTIONOUS SUBSTANCES

SECTION I - INFECTIOUS AGENT

NAME: Clostridium perfringens

SYNONYM OR CROSS REFERENCE: C. welchii, enteritis necroticans

CHARACTERISTICS: Gram positive fat short rods, non-motile, anaerobic spores seldom observed, type A2 produces an enterotoxin

SECTION II - HEALTH HAZARD

PATHOGENICITY: Food poisoning (Type A); intestinal disorder characterized by sudden onset of colic followed by diarrhea, nausea, but vomiting and fever is usually absent; mild, short in duration and rarely fatal; type C strains cause necrotizing enteritis; Type A strains can also cause wound contamination; traumatic or nontraumatic myonecrosis (gas gangrene); clostridial cellulitis, intra-abdominal sepsis, gangrenous cholecystitis

EPIDEMIOLOGY: Widespread and relatively frequent in countries with cooking practices that favour multiplication of Clostridia

HOST RANGE: Humans and animals

INFECTIONOUS DOSE: $10^5$ organisms/g food

MODE OF TRANSMISSION: Ingestion of food contaminated by soil or feces, held under conditions which permit multiplication of the organism (inadequately cooked or reheated meats)

INCUBATION PERIOD: From 6-24 hours; usually 10-12 hours

COMMUNICABILITY: Not directly transmitted from person to person

SECTION III - DISSEMINATION

RESERVOIR: Soil; gastrointestinal tract of healthy persons and animals (cattle, pigs, poultry and fish)

ZOONOSIS: None

VECTORS: None

SECTION IV - VIABILITY

DRUG SUSCEPTIBILITY: Penicillin is generally the first line choice.

DRUG RESISTANCE: Resistance to penicillin, tetracycline, erythromycin, chloramphenicol, metronidazole and clindamycin has been reported.

SUSCEPTIBILITY TO DISINFECTANTS: Sporeformers are fairly resistant; moderate susceptibility to 1% sodium hypochlorite; susceptible to high level
disinfectants (glutaraldehyde) with prolonged contact time

**PHYSICAL INACTIVATION:** Sporeformers are fairly resistant to heat; spores survive normal cooking temperatures but are destroyed by moist heat (121°C for at least 15 min)

**SURVIVAL OUTSIDE HOST:** Meat - 330 days; spores survive for long periods in soil

**SECTION V - MEDICAL**

**SURVEILLANCE:** Monitor for symptoms; detection of organism and/or enterotoxin in stool

**FIRST AID/TREATMENT:** Fluid replacement and alleviate cramping abdominal pain

**IMMUNIZATION:** None available

**PROPHYLAXIS:** None available

**SECTION VI - LABORATORY HAZARDS**

**LABORATORY-ACQUIRED INFECTIONS:** Rarely reported; 6 cases for *Clostridium* spp.

**SOURCES/SPECIMENS:** Clinical specimens - wound exudates, feces

**PRIMARY HAZARDS:** Accidental parenteral inoculation, ingestion

**SPECIAL HAZARDS:** None

**SECTION VII - RECOMMENDED PRECAUTIONS**

**CONTAINMENT REQUIREMENTS:** Biosafety level 2 practices, containment equipment and facilities for activities involving clinical specimens and cultures

**PROTECTIVE CLOTHING:** Laboratory coat; gloves when direct contact with infectious materials is unavoidable

**OTHER PRECAUTIONS:** Good personal hygiene and frequent handwashing

**SECTION VIII - HANDLING INFORMATION**

**SPILLS:** Allow aerosols to settle; wear protective clothing; gently cover spill with paper towels and apply a suitable disinfectant (high level, or 1% sodium hypochlorite), starting at perimeter and working towards the centre; allow sufficient contact time before clean up

**DISPOSAL:** Decontaminate before disposal; steam sterilization, chemical disinfection, incineration

**STORAGE:** In sealed containers that are appropriately labelled

**SECTION IX - MISCELLANEOUS INFORMATION**

**Date prepared:** January 2000, revised July 2003

**Prepared by:** Office of Laboratory Security, PHAC

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