CLOSTRIDIUM DIFFICILE

PATHOGEN SAFETY DATA SHEET
- INFECTIOUS SUBSTANCES

INFECTIOUS AGENT

NAME: Clostridium difficile

SYNONYM OR CROSS REFERENCE: Clostridium difficile is also called C. difficile, C. diff, and CDI (Clostridium difficile infection), CDAD (Clostridium difficile-associated disease).

CHARACTERISTICS: Gram positive rod, anaerobic, motile, subterminal spores, produces a cytotoxin and enterotoxin.

HAZARD IDENTIFICATION

PATHOGENICITY: Opportunistic pathogen, broad-spectrum antibiotic therapy eliminates competing gut flora, allowing the overgrowth of C. difficile; important cause of antibiotic-associated diarrhea and pseudomembranous colitis; diarrhea in cancer patients receiving chemotherapy; symptoms range from mild diarrhea to severe colitis (possibly fatal).

EPIDEMIOLOGY: Worldwide; 2-3% of adults are asymptomatic carriers; 50% of healthy neonates (<1 year old) are carriers; nosocomial transmission increasingly important.

HOST RANGE: Humans and other animals.

INFECTIOUS DOSE: Not known.

MODE OF TRANSMISSION: Fecal-oral contact; evidence for transmission via fomites and hands exists.

INCUBATION PERIOD: Not known.

COMMUNICABILITY: May be transmitted from person to person.

DISSEMINATION

RESERVOIR: Soil, water, hay, sand; intestinal tract of humans and other animals.
ZOONOSIS: None

VECTORS: None

STABILITY AND VIABILITY

DRUG SUSCEPTIBILITY: Susceptible to metronidazole and vancomycin.

DRUG RESISTANCE: Metronidazole and vancomycin-resistant strains have been reported.

SUSCEPTIBILITY TO DISINFECTANTS: Spores are fairly resistant; moderate susceptibility to 1% sodium hypochlorite; susceptible to high level disinfectants (>2% glutaraldehyde) with prolonged contact time.

PHYSICAL INACTIVATION: Spores are fairly resistant to heat (spores destroyed by moist heat - 121°C for at least 15 min).

SURVIVAL OUTSIDE HOST: Spores can survive for long periods outside of host.

FIRST AID / MEDICAL

SURVEILLANCE: Monitor for symptoms; recovery of C. difficile organisms and/or toxin from stool samples.

FIRST AID/TREATMENT: Antibiotic therapy should be stopped; oral therapy with metronidazole or vancomycin.

IMMUNIZATION: None

PROPHYLAXIS: None

LABORATORY HAZARDS

LABORATORY-ACQUIRED INFECTIONS: 1 reported case of a laboratory-acquired infection from C. difficile.

SOURCES/SPECIMENS: Clinical specimens – feces.

PRIMARY HAZARDS: Injuries from contaminated sharp instruments.

SPECIAL HAZARDS: Not known.

EXPOSURE CONTROLS / PERSONAL PROTECTION

RISK GROUP CLASSIFICATION: Risk Group 2.

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: None

HANDLING AND STORAGE

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 labeled.
REFERENCE

Pathogen Safety Data Sheet (PSDS) for *Clostridium difficile* has been modified from the ones produced by the Public Health Agency of Canada as educational and informational resources for laboratory personnel working with infectious substances.

1) Picture from Wikipedia
2) Picture from "Welsh hospital infection rates revealed", by Owain Clarke BBC Wales health correspondent, last updated 11 July 2013.