**SECTION I – INFECTIOUS AGENT**

NAME: Human clinical specimens

SYNONYM OR CROSS REFERENCE: Human tissue, human body fluids.

This MSDS is suitable for use with human clinical specimens obtained from the general populace and

from individuals with no known indication of infectious disease. For handling of human clinical

specimens from individuals with a confirmed infectious disease, personnel should consult an

appropriate MSDS for the specific infectious microbe involved rather than follow this MSDS.

CHARACTERISTICS: By themselves, human clinical specimens are not infectious but they may harbour

infectious microbes unknowingly acquired by the source patient or donor. Dozens and dozens of

infectious microbes causing serious and potentially lethal diseases can survive within human clinical

specimens including viral, bacterial, fungal, prion and parasitic pathogens.

**SECTION II – HAZARD IDENTIFICATION**

PATHOGENICITY/TOXICITY: Highly variable, dependent on endemic infectious disease rates within the

population from which the human clinical specimens were acquired.

EPIDEMIOLOGY: Infectious microbes associated with human clinical specimens are a worldwide health

problem. As there is no method to determine in real-time the health status of a patient or donor at the

time of collection, all unfixed human tissue and body fluid clinical specimens are assumed to be

potential sources of infectious pathogens regardless of the source or case history. This assumption is

known as a “Universal Precaution” and is a cornerstone of infection prevention and control practices in

the medical community.

HOST RANGE: Humans

INFECTIOUS DOSE: Exposure to even minute amounts of a human clinical specimen may be sufficient

to transmit infectious microbes.

MODE OF TRANSMISSION: Variable; transmission of infectious microbes acquired from human clinical

specimens can occur through various forms of human contact including perinatal/mother-to-child,

household (non-sexual), sexual, needle-sharing, and occupational/health-care related.

INCUBATION PERIOD: Highly variable.

COMMUNICABILITY: Human-to-human transmission of infectious microbes associated with human

clinical specimens can occur following a laboratory exposure.

**SECTION III – DISSEMINATION**

RESERVOIR: Primary reservoir is humans.

ZOONOSIS: Many infectious microbes associated with human clinical specimens also cause disease in

mammalian and avian species.

VECTORS: Several infectious microbes associated with human clinical specimens are transmissible via

mosquitoes and other biting insects.

**SECTION IV – STABILITY AND VIABILITY**

DRUG SUSCEPTIBILITY: Not applicable

SUSCEPTIBILITY TO DISINFECTANTS: Infectious microbes associated with human clinical specimens are

inactivated by fixation in formaldehyde or glutaraldehyde or via treatment with sodium hypochlorite

(minimum 5,000 ppm available chlorine). Quarternary ammonium compounds, iodines and alcohols

(concentration of 70 to 80%) are effective against many but not all infectious microbes associated with

human clinical specimens.

PHYSICAL INACTIVATION: Small single volumes of human clinical specimens should be autoclaved for

a minimum of 45 minutes at 121°C prior to disposal or should be collected for incineration. Larger

human clinical specimens should be incinerated.

SURVIVAL OUTSIDE HOST: Survivability in the environment is highly variable amongst the infectious

microbes that can be associated with human clinical specimens. The ability of many microbes to

survive in the environment can be enhanced when associated with human clinical specimens with the

human tissue or fluid acting to protect the microbe from environmental forces.

**SECTION V – FIRST AID /MEDICAL**

SURVEILLANCE: Unfortunately, most laboratory-acquired infections from handling human clinical

specimens cannot be traced to a known exposure event. Monitor health for signs of unseasonal illness.

If severe symptoms are experienced, seek medical attention and advise attending medical personnel of

work activities with human clinical specimens.

FIRST AID/TREATMENT: For percutaneous injuries involving human clinical specimens, the affected

area should be washed immediately with soap and water, then with 10% providine iodine solution or

similar medical disinfectant. Cover wound with dry dressing and seek medical attention. For exposure

of mucous membranes and conjunctivae, the affected area should be irrigated for a minimum of 15

minutes using an eyewash station. Seek medical attention after primary treatment. Following

cutaneous exposure of intact skin, the affected area should be washed immediately with soap and

water.

IMMUNIZATION: Vaccines are available against some pathogens associated with human clinical

specimens, such as Hepatitis B Virus, however there is no vaccine available against some of the most

common pathogens associated with this material, such as Human Immunodeficiency Virus and

Hepatitis C Virus.

PROPHYLAXIS: Post-exposure prophylaxis regimens are highly variable and are based on the nature of

the exposure. Many post-exposure regimens are time-sensitive and require an individual to consult

with a physician within hours of a known exposure.

**SECTION VI – LABORATORY HAZARDS**

LABORATORY-ACQUIRED INFECTIONS: The rates of infection with pathogenic microbes acquired

though exposure to human clinical specimens are reported to be several times greater in research and

clinical laboratory staff than in the general population. Handling of human clinical specimens is

believed to be the most frequently reported source of laboratory-acquired infections.

SOURCES/SPECIMENS: All unfixed human tissue and body fluid clinical specimens are assumed to be

potential sources of infectious pathogens regardless of the source or case history. Also includes

primary cell cultures and unprocessed waste derived from human tissue or body fluid specimens.

PRIMARY HAZARDS: Percutaneous (e.g., needlestick) or mucous membrane exposures to human body

fluids or homogenized human tissue preparations.

SPECIAL HAZARDS: There is a potential for infection via aerosols and contaminated surfaces.

**SECTION VII – EXPOSURE CONTROLS/PERSONAL PROTECTION**

RISK GROUP CLASSIFICATION: Risk Group 2

CONTAINMENT REQUIREMENTS: Containment Level 2 facilities, equipment and operational practices

for work involving infectious or potentially infectious material, animals (transgenic strains or

xenotransplant recipients), or cultures. In the event, analysis or processing of the human clinical

specimens confirms the presence of an infectious pathogen, containment requirements for the

specimens shall be reassessed against an appropriate MSDS for the pathogen identified.

PROTECTIVE CLOTHING: Fully-fastened laboratory coat or gown, floor-length pants, and closed-toe,

closed-heel shoes. Gloves when direct skin contact with human clinical specimens or untreated

derivatives is unavoidable. Eye protection must be used where there is a known or potential risk of

exposure to splashes.

OTHER PRECAUTIONS: All procedures that may produce aerosols, or involve large single volumes of

human clinical specimens should be conducted in a biological safety cabinet (BSC), HEPA-filtered

downdraft table or other aerosol suppression device. Centrifugation of human clinical specimens

should be conducted in centrifuges equipped with safety cups or rotors with loading and unloading of

rotors/cups occurring inside a BSC. The use of needles, syringes, and other sharp objects should be

strictly limited. Additional precautions should be considered with work involving transgenic or

xenotransplant animals or large-scale primary culture activities.

**SECTION VIII – HANDLING AND STORAGE**

SPILLS: Allow aerosols to settle and, wearing protective clothing, gently cover the spill with a large

bath towel or other suitably sized piece of absorbent material soaked in a freshly made solution of 10%

(v/v) bleach. Leave towel in place over the spill for a minimum of 30 minutes. Collect towel in a

garbage bag for disposal in regular laboratory waste stream. Wipe down affected area with a mop, or

similar absorbent material, and bucket of 10% (v/v) bleach to clean up remaining liquid. Report spill to

supervisor and file an institutional incident report.

DISPOSAL: Decontaminate all waste that contain or have come in contact with human clinical

specimens or untreated derivatives by autoclave, chemical disinfection, gamma irradiation, or

incineration before disposing.

STORAGE: Human clinical specimens should be stored in leak-proof containers that are appropriately

labeled with, at minimum, an identification code, date received and research group designation.

**SECTION IX – REGULATORY AND OTHER INFORMATION**

REGULATORY INFORMATION: The import, transport, and use of human clinical specimens in Canada is

regulated under many regulatory bodies, including the Public Health Agency of Canada, Health Canada,

Environment Canada, and Transport Canada. Users are responsible for ensuring they are compliant

with all relevant acts, regulations, guidelines, and standards.

PREPARED BY: Biosafety Division, Department of Environment, Health and Safety, University of

Alberta. Although the information, opinions and recommendations contained in this Material Safety Data Sheet are compiled from sources believed to be reliable, we accept no responsibility for the accuracy,

sufficiency, or reliability or for any loss or injury resulting from the use of this information. Newly

discovered hazards are frequent and this information may not be completely up to date.

REFERENCES

Clostridium difficile; PSDS [Online]; Public Health Agency of Canada: Canada, 2000, <http://www.phacaspc.gc.ca/lab-bio/res/psds-ftss/msds36e-eng.php> (accessed February 8, 2013).

Escherichia coli, enterohemorrhagic; PSDS [Online]; Public Health Agency of Canada: Canada, 2000,

<http://www.phac-aspc.gc.ca/lab-bio/res/psds-ftss/msds63e-eng.php> (accessed February 8, 2013).

Hepatitis B Virus (HBV); PSDS [Online]; Public Health Agency of Canada: Canada, 2011,

<http://www.phac-aspc.gc.ca/lab-bio/res/psds-ftss/hepatitis-b-eng.php> (accessed January 22, 2013).

Hepatitis C Virus (HCV); PSDS [Online]; Public Health Agency of Canada: Canada, 2010,

<http://www.phac-aspc.gc.ca/lab-bio/res/psds-ftss/hepc-eng.php> (accessed January 22, 2013).

Human Immunodeficiency Virus (HIV); PSDS [Online]; Public Health Agency of Canada: Canada,

2011,http://www.phac-aspc.gc.ca/lab-bio/res/psds-ftss/hiv-vih-eng.php