# Pathogen Safety Data Sheet

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| Section I – Infectious Agent |
| Name Name of the pathogen using official taxonomic naming convention (e.g., *Genus species, Genus species* subsp. *subspecies,* or *Genus* spp. for bacteria, parasites, fungi; Species for viruses; Prion Disease Agent for prions).  **Agent type:** Which of the following classes of agent characterize the pathogen: Bacteria, Fungi, Virus, Parasite, or Prion?  **Taxonomy:**  **Family:** e.g., Streptococcaceae  **Genus:** e.g.,*Streptococcus*  **Species:** e.g.,*S. salivarius*  **Subspecies/Strain/Clonal Isolate:** Include if applicable |
| Synonym / Cross Reference What other names might be used to find information on the pathogen? For example: name(s) of the disease(s) that the agent is commonly responsible for; other classifications (e.g., arbovirus); former taxonomic name; common name. |
| Characteristics **Brief Description**: Describe critical aspects, such as appearance, size, shape, genome structure (e.g., RNA/DNA virus, sense/antisense).  **Properties**: Properties that contribute to risk, such as modifications (i.e., from a parental strain), sporulation, toxin production, oxygen requirements, enzymatic activity, life cycle (if relevant), reproduction. |
| Section ii – Hazard Identification |
| Pathogenicity / Toxicity Length of the illness/disease associated with the infectious agent in humans and animals (focussing primarily on animals of economic importance). List of the symptoms of the disease, including severity and prevalence. Mortality rate of the disease. Variations of the disease and clinical presentations. Other ailments associated with the disease. Potential acute and chronic effects should be discussed if this information is available.  **Predisposing factors:** List of conditions or cofactors that may predispose to infection, disease, or more severe disease (e.g., pregnancy, immune status). |
| Communicability Outline the various ways in which the infectious agent can be transmitted from one host to another: ingestion, injection (including vectors), mucous membrane/skin contact (or genitourinary), inhalation (airborne or aerosols). What is the likelihood of transmission by direct (intimate, casual) or indirect (fomites, vectors) contact? Is the same true for humans and animals? What is the preferred mode of transmission (e.g., influenza viruses typically are transmitted by inhalation of infectious aerosols)? Note, zoonosis is elaborated below. |
| Epidemiology Is the disease maintained in human or animal populations and, if so, where (e.g., endemic in Western Canada)? Where is the disease localised geographically? Have there been specific outbreaks of the disease? If so, what was the magnitude of these outbreaks? |
| Host Range **Natural Host(s):** If possible, identify primary (definitive), secondary (intermediate), and dead-end hosts. Note, reservoir is elaborated below.  **Other Host(s):** List other hosts, includingexperimentally infected hosts, if applicable. |
| Infectious Dose If available in the literature, list the number of organisms or concentration of organisms required to cause disease (typically ID50) in the natural host(s). If no information is available or if the number of organisms cannot be determined (e.g., from TCID50), enter “unknown”. |
| Incubation Period What is the duration between contact with the infectious agent and presentation of the earliest clinical signs of the disease in the natural host(s) (usually measured in days)? |
| Section III – Dissemination |
| Reservoir Are there organisms (often a species of small mammal or bird) in which the infectious agent is maintained without causing any obvious clinical symptoms? |
| Zoonosis / Reverse Zoonosis Is the disease spread between animals and humans? If so, in which direction, and between which species? If the infectious substance is not zoonotic enter “none”. |
| Vectors Is there an invertebrate (typically arthropod) species that can carry and transmit the pathogen to humans or animals? Typically this refers to an arthropod that transmits by biting or laying eggs, but could refer to a “mechanical vector” (please specify). If the infectious substance is not spread by arthropod vectors enter “none”. |
| Section IV – Stability and Viability |
| Drug Susceptibility List drugs/pharmaceutical agents that are effective and available for treating infection/disease? Note: vaccination is elaborated below. |
| Drug Resistance Describe known drug resistance or multi-drug resistance. |
| Susceptibility to Disinfectants What disinfectants are capable of destroying the pathogen (including its toxins and/or spores (if applicable) and, if known, what conditions are necessary to achieve disinfection (concentration, contact time, temperature)? If unknown, are there disinfectants that are effective against a class of pathogens (e.g., Gram positive bacteria)? Are there disinfectants or classes of disinfectant to which the pathogen is resistant? |
| Physical Inactivation Can the infectious substance be inactivated by other means (e.g., UV irradiation, gamma irradiation, dry or moist heat, pH) and, if known, what are the effective parameters (method, duration, environmental conditions). If unknown, are there physical inactivation methods that are effective against a class of pathogens? |
| Survival Outside Host Is there documentation of survival times for the infectious agent outside of its host environment (e.g., is the infectious agent still viable in collected blood, semen, or other fluids? Is it viable in dried blood, on surfaces, or in aerosol form?). If so, how long is it documented to survive? Note that survival on lab surfaces or in the environment is more relevant in terms of assessing risk than survival at -80°C. |
| Section IV – First Aid AND Medical |
| Surveillance How can the pathogen be detected/diagnosed in an infected individual? What are the symptoms to look for? Based on the medical surveillance program, what are the recommendations for surveillance? Is it important that the surveillance plan include establishing a history of contact with animals or international travel in infected individuals? |
| First Aid / Treatment How can the infection/disease be treated in an infected individual? Is treatment typically undertaken for infected animals? Based on the medical surveillance program and post-exposure response plan, what specific first aid/treatment is recommended? |
| Immunization Based on the available and effective vaccines and the medical surveillance program, what preventative and/or post-exposure immunisations are recommended for those working with the pathogen? Are these recommendations universal, or based on the activities being performed or other factors? Are there specific cofactors (e.g., pregnancy) that would change the recommendations? Are animals typically vaccinated against the pathogen? |
| Prophylaxis Based on the medical surveillance program, what pre- or post-exposure prophylaxis is recommended? Are these recommendations universal, or based on the activities being performed or other factors? Are there specific cofactors (e.g., pregnancy) that would change the recommendations? |
| Section VI – Laboratory Hazards |
| Laboratory-Acquired Infections Is there evidence in the literature of laboratory (research, diagnostic, healthcare) acquired infections with the infectious agent? If so, how many and what were the circumstances? Have there been exposure incidents with this pathogen within the institution? If so, what were the circumstances? |
| Sources / Specimens What are the primary biological samples and specimens likely to contain the infectious agent (e.g., blood, urine, semen, mucous, faeces, necropsy tissues)? |
| Primary Hazards What is the primary exposure hazard? Examples:  Ingestion of infectious material  Exposure of mucous membranes/skin to infectious material  Autoinoculation with infectious material  Inhalation of airborne or aerosolized infectious material  Bites/scratches of an infected animal  Exposure to infectious material in animal waste or animal carcasses  Exposure to infectious material on fomites |
| Special Hazards What other hazards exist that an individual should be aware of when dealing with this pathogen? Is contamination of shipping or packaging material possible or likely (e.g., in diagnostic labs that receive potentially contaminated testing request forms shipped in the same box as the samples)?  If there are no special hazards for this agent enter “none”. |
| Section VII – Exposure Controls AND Personal Protection |
| Risk Group Classification What is the Risk Group classification in humans and animals for the pathogen? |
| Containment Requirements What are the containment requirements for working with the pathogen (i.e., what Containment Level)? Is this the same for all activities (e.g., *in vitro* and *in vivo*)? Are there specific requirements (e.g., using a biological safety cabinet) for certain activities? |
| Protective Clothing Should specific personal protective equipment (PPE) be used when working with this pathogen (e.g., respirators, gloves, lab coat)? If so, when should the specified PPE be used? |
| Other Precautions What precautions, other than PPE, should be considered when working with the pathogen? |
| Section VIII – Handling and Storage |
| Spills Following a spill involving the pathogen, what procedure should be followed? What type and quantity of disinfectant should be used (from Section IV – Stability and Viability)? An example procedure is listed below:  “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 How should infectious or potentially infectious material be disposed? Is there a specific decontamination procedure that should be followed prior to disposal? Are there different procedures for disposal of solid and liquid waste (e.g., physical inactivation versus effluent treatment)? |
| Storage How should infectious material be stored? An example can be found below for CL2/CL2-Ag zones: “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 IX – Regulatory and Other Information |
| Regulatory Information Who are the regulatory authorities for the use, storage, import, export, transport, transfer, disposal, or other activities involving the pathogen in the country in which this PSDS is being used. In Canada, this includes the Public Health Agency of Canada, Health Canada, Canadian Food Inspection Agency, Environment Canada, Transport Canada, and the Department of Foreign Affairs, Trade and Development. Users are responsible for ensuring they are compliant with all relevant acts, regulations, guidelines, and standards, including Federal, Provincial/Territorial, and Municipal. |
| Updated Date of last update |
| Prepared By Name and Institution |
| References List of references used in the order that they were cited in the text.  Every piece of information should be referenced and, where possible, peer reviewed primary literature sources (e.g., Journal articles) and high quality secondary sources (e.g., review articles, text books) should be used. Unless used as a source of primary information (e.g., case counts on the WHO or CDC website), internet “factsheets” from other websites do not constitute primary literature. |