

# SELECT AGENTS AND TOXINS LIST

## UPDATED DECEMBER 12<sup>TH</sup> 2002

As prepared by  
Katheryn Harris  
North Western Univ.

Except for exclusions listed in Appendix I, the viruses, bacteria, fungi, toxins, genetic elements, recombinant nucleic acids, and recombinant organisms specified in this list are Department of Health and Human Services (HHS) select agents and toxins, United States Department of Agriculture (USDA) high consequence livestock pathogens, or HHS/USDA overlap agents. Animal and Plant Health Inspection Service (APHIS) regulated plant pathogens are listed in Appendix I.

### **VIRUSES:**

- African horse sickness virus <sup>α</sup>
- African swine fever virus <sup>α</sup>
- Akabane virus <sup>α</sup>
- Avian influenza virus (highly pathogenic) <sup>α</sup>
- Bluetongue virus (exotic) <sup>α</sup>
- Camel pox virus <sup>α</sup>
- Cercopithecine herpesvirus 1 (Herpes B virus) <sup>β</sup>
- Classical swine fever virus <sup>α</sup>
- Crimean-Congo haemorrhagic fever virus <sup>β</sup>
- Eastern Equine Encephalitis virus <sup>χ</sup>
- Ebola viruses <sup>β</sup>
- Foot-and-mouth disease virus <sup>α</sup>
- Goat pox virus <sup>α</sup>
- Hendra virus <sup>χ †</sup>
- Japanese encephalitis virus <sup>α</sup>
- Lassa fever virus <sup>β</sup>
- Lumpy skin disease virus <sup>α</sup>
- Malignant catarrhal fever virus (exotic) <sup>α</sup>
- Marburg virus <sup>β</sup>
- Menangle virus <sup>α</sup>
- Monkeypox virus <sup>β</sup>
- Newcastle disease virus (exotic) <sup>α</sup>
- Nipah virus <sup>χ †</sup>
- Peste des petits ruminants virus <sup>α</sup>
- Rift Valley fever virus <sup>χ</sup>
- Rinderpest virus <sup>α</sup>
- Sheep pox virus <sup>α</sup>
- South American Haemorrhagic Fever viruses (Junin, Machupo, Sabia, Flexal, Guanarito) <sup>β</sup>
- Swine vesicular disease virus <sup>α</sup>
- Tick-borne encephalitis complex (flavi) viruses [Central European Tick-borne encephalitis, Far Eastern Tick-borne encephalitis (Russian Spring and Summer encephalitis, Kyasanur Forest disease, Omsk Hemorrhagic Fever)] <sup>β</sup>
- Variola major virus (Smallpox virus) and Variola minor virus (Alastrim) <sup>β</sup>
- Venezuelan Equine Encephalitis virus <sup>χ</sup>
- Vesicular stomatitis virus (exotic) <sup>α</sup>

### **FUNGI:**

- *Coccidioides immitis* <sup>χ</sup>
- *Coccidioides posadasii* <sup>β</sup>

## **PRION**

- Bovine spongiform encephalopathy agent <sup>α</sup>

## **BACTERIA:**

- *Bacillus anthracis* <sup>λ</sup>
- *Brucella abortus* <sup>λ</sup>
- *Brucella melitensis* <sup>λ</sup>
- *Brucella suis* <sup>λ</sup>
- *Burkholderia mallei* (formerly *Pseudomonas mallei*) <sup>λ</sup>
- *Burkholderia pseudomallei* (formerly *Pseudomonas pseudomallei*) <sup>λ</sup>
- *Clostridium botulinum* (and botulinum neurotoxin producing species of *Clostridium*) <sup>λ</sup>
- *Cowdria ruminantium* (Heartwater) <sup>α</sup>
- *Coxiella burnetii* <sup>λ</sup>
- *Francisella tularensis* <sup>λ</sup>
- *Mycoplasma capricolum*/ *M. F38*/*M. mycoides capri* (contagious caprine pleuropneumonia) <sup>α</sup>
- *Mycoplasma mycoides mycoides* (contagious bovine pleuropneumonia) <sup>α</sup>
- *Rickettsia prowazekii* <sup>β</sup>
- *Rickettsia rickettsii* <sup>β</sup>
- *Yersinia pestis* <sup>β</sup>

## **TOXINS:**

- Abrin <sup>β</sup>
- Botulinum neurotoxin<sup>λ</sup>
- *Clostridium perfringens* epsilon toxin <sup>λ</sup>
- Conotoxins <sup>β</sup>
- Diacetoxyscirpenol <sup>β</sup>
- Ricin <sup>β</sup>
- Saxitoxin <sup>β</sup>
- Shigatoxin <sup>λ</sup>
- Shiga-like ribosome inactivating proteins <sup>β</sup>
- Staphylococcal enterotoxins <sup>λ</sup>
- Tetrodotoxin <sup>β</sup>
- T-2 toxin <sup>λ</sup>

<sup>α</sup> USDA high consequence livestock pathogens

<sup>β</sup> HHS select agents and toxins

<sup>λ</sup> HHS/USDA overlap agents

‡ Nipah and Hendra Complex Viruses were previously listed as Equine Morbillivirus Virus

## **GENETIC ELEMENTS, RECOMBINANT NUCLEIC ACIDS, AND RECOMBINANT ORGANISMS:**

1. Viruses, bacteria, fungi, and toxins listed that have been genetically modified.
2. Select agent viral nucleic acids (synthetic or naturally derived, contiguous or fragmented, in host chromosomes or in expression vectors) that can encode infectious and/or replication competent forms of any of the select agent viruses.
3. Nucleic acids (synthetic or naturally derived) that encode for the functional form(s) of any of the toxins listed if the nucleic acids:
  - (i) are in a vector or host chromosome;
  - (ii) can be expressed *in vivo* or *in vitro*; or
  - (iii) are in a vector or host chromosome and can be expressed *in vivo* or *in vitro*.

### **OTHER RESTRICTIONS:**

- Experiments utilizing recombinant DNA that involve the deliberate transfer of a drug resistance trait to the listed agents that are not known to acquire the trait naturally, if such acquisition could compromise the use of the drug to control disease agents in humans, eternity medicine, or agriculture.
- Experiments involving deliberate formation of recombinant DNA containing genes for the biosynthesis of listed toxin lethal for vertebrates at an LD50 <100 ng/kg body weight

## **APPENDIX I**

### **ANIMAL AND PLANT HEALTH INSPECTION SERVICE (APHIS) REGULATED PLANT PATHOGENS**

#### **VIRUSES:**

- Plum pox potyvirus

#### **FUNGI:**

- *Peronosclerospora philippinensis*
- *Phakopsora pachyrhizi*
- *Sclerophthora rayssiae var. zaeae*
- *Synchytrium endobioticum*

#### **BACTERIA:**

- *Liberobacter africanus*
- *Liberobacter asiaticus*
- *Ralstonia solanacearum*, race 3, biovar 2
- *Xanthomonas oryzae* pv. *Oryzicola*
- *Xylella fastidiosa* (citrus variegated chlorosis strain)

## **EXCLUSIONS:**

1. Any select agent or toxin that is in its naturally occurring environment provided it has not been intentionally introduced, cultivated, collected, or otherwise extracted from its natural source.
2. Non-viable select agent organisms or nonfunctional toxins.
3. Fixed tissues that bear or contain select agents or toxins.\*
4. Genetic elements or sub-units of agents or toxins, if the genetic elements or sub-units are not capable of causing disease.\*
5. The vaccine strain of Junin virus (Candid #1).
6. The vaccine strain of Rift Valley fever virus (MP-12).
7. Venezuelan Equine encephalitis virus vaccine strain TC-83.
8. The medical use of toxins for patient treatment.
9. The following toxins (in the purified form or in combinations of pure and impure forms) if the aggregate amount under the control of a principal investigator does not, at any time, exceed the amount specified:
  - 100 mg of Abrin
  - 0.5 mg of Botulinum neurotoxins
  - 100 mg of *Clostridium perfringens* epsilon toxin
  - 100 mg of Conotoxins
  - 1,000 mg of Diacetoxyscirpenol
  - 100 mg of Ricin
  - 100 mg of Saxitoxin
  - 100 mg of Shigatoxin
  - 100 mg of Shiga-like ribosome inactivating proteins
  - 5 mg of Staphylococcal enterotoxins
  - 100 mg of Tetrodotoxin
  - 1,000 mg of T-2 toxin

The administrator may exclude from this list attenuated strains of HHS select agents or toxins upon a determination that they do not pose a severe threat to the public health and safety.

\* The importation and interstate movements of these nonviable agents, fixed tissues, and genetic elements or subunits are still subject to the permit requirements under 9 CFR part 122.