

Biological Toxins Requiring an IBC Protocol

Toxin	LD ₅₀ (µg/kg)*
Abrin**	0.7
Aerolysin	7
Botulinum toxin A**	0.0012
Botulinum toxin B**	0.0012
Botulinum toxin C1**	0.0011
Botulinum toxin C2**	0.0012
Botulinum toxin D**	0.0004
Botulinum toxin E**	0.0011
Botulinum toxin F**	0.0025
b-bungarotoxin	14
<i>Clostridium difficile</i> enterotoxin A	0.5
<i>Clostridium perfringens</i> lecithinase	3
<i>Clostridium perfringens</i> perfringolysin O	13-16
<i>Clostridium perfringens</i> delta toxin	5
<i>Clostridium perfringens</i> epsilon toxin	0.1
Conotoxin (Only short, paralytic alpha conotoxins with specific sequences are considered Select Agents)**	12-30
Diacetoxyscirpenol**	1000-10,000
Diphtheria toxin	0.1
Listeriolysin	3-12
Modeccin	1-10
Pertussis toxin	15
Pneumolysin	1.5
<i>Pseudomonas aeruginosa</i> toxin A	3
Ricin**	2.7
Saxitoxin**	8
Shiga toxin	0.25
<i>Shigella dysenteriae</i> neurotoxin	1.3
<i>Staphylococcus enterotoxin B**</i>	25
<i>Staphylococcus enterotoxin F</i>	2-10
<i>Staphylococcus enterotoxins A, C, D, and E**</i>	20(A); <50(C)
Streptolysin O	8
Streptolysin S	25
T-2 toxin**	5,000-10,000
Taipoxin	2
Tetanus toxin	0.001
Tetrodotoxin**	8
Volkensin	1.4
<i>Yersinia pestis</i> murine toxin	10

*Note that the LD₅₀ values are from a number of sources (see below). For specifics on route of application, animal use, and variations on the listed toxins, please go to these references. (Table courtesy, in part, of University of Florida EHSO).

**Toxins with double-asterisk are considered Select Agents by the Federal Government if kept by an individual PI at or above threshold levels (listed below).

If you anticipate approaching the following Select Agent threshold amounts, please contact the Office of Biological Safety:

Select Agent Toxin	Threshold	Select Agent Toxin	Threshold
Abrin	1000mg	Saxitoxin	500mg
Botulinum toxin	1mg	Staph enterotoxins A-E	100mg
Conotoxin	100mg	T-2 Toxin	10,000mg
Diacetoxyscirpenol	10,000mg	Tetrodotoxin	500mg
Ricin	1000mg		

REFERENCES:

- Gill, D. Michael; 1982; Bacterial toxins: a table of lethal amounts; Microbiological Reviews; 46: 86-94.
- Stirpe, F.; Luigi Barbieri; Maria Giulia Battelli, Marco Soria and Douglas A. Lappi; 1992; Ribosome-inactivating proteins from plants: present status and future prospects; Biotechnology; 10: 405-412.
- Registry of toxic effects of chemical substances (RTECS): comprehensive guide to the RTECS. 1997. Doris V. Sweet, ed., U.S. Dept of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health, Cincinnati, OH.
- United States Program for Select Agents and Toxins:
<https://www.selectagents.gov/SelectAgentsandToxinsList.html>
<https://www.selectagents.gov/PermissibleToxinAmounts.html>