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The University of Texas at El Paso

**Institutional Biosafety Committee**

**Appendix F Form**

*Instructions:* Forms need to be completed and submitted via [IRBNet](http://www.irbnet.org/) on the 1st of every month.. Submissions entered after the two weeks from the meeting date will be considered for review at the following meeting. Meeting dates are posted on the [IBC website](http://research.utep.edu/Default.aspx?tabid=58993). Any questions contact the IBC office at [ibc@utep.edu](mailto:ibc@utep.edu).

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| **APPENDIX F: Arthropod**  *Text of the Arthropod Containment Guidelines can be found at* [*http://online.liebertpub.com/toc/vbz/3/2*](http://online.liebertpub.com/toc/vbz/3/2) |

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| **Arthropod Containment Levels:**  *Text of the Arthropod Containment Levels can be found at* [*http://online.liebertpub.com/doi/pdf/10.1089/153036603322163475*](http://online.liebertpub.com/doi/pdf/10.1089/153036603322163475) | |
|  | **Arthropod Containment Level 1 (ACL-1):**  Arthropod Containment Level 1 (ACL-1) is suitable for work with uninfected arthropod vectors or those infected with a non-pathogen including 1) arthropods that are already present in the local geographic region regardless of whether there is active vector-borne disease transmission in the locale, and 2) exotic arthropods that upon escape would be inviable or become only temporarily established in areas not having active vector-borne disease transmission. This category would include the most educational use of arthropods. A summary of the containment levels is provided in Table 1 |
|  | **Arthropod Containment Level 2 (ACL-2):**  Arthropod Containment Level 2 (ACL-2) must be practiced if working with exotic and indigenous arthropods infected with BSL-2 agents associated with animal and/or human disease, or that are suspected of being infected with such agents. Uninfected genetically modified arthropod vectors also fall under this level provided the modification has no, or only negative effects on viability, survivorship, host range, or vector capacity (see Risk Assessment). ACL-2 builds upon the practices, procedures, containment equipment, and facility requirements of ACL-1. It is more stringent in the physical containment, disposal, and facilities design. Moreover, access is more restricted than ACL-1. The decision to cultivate infected exotic arthropods under ACL-2 conditions in active transmission areas or in cases in which establishment is a possibility requires that measures that otherwise would only be recommended or preferred must be met. |

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| 1. **Risk Assessment: Arthropods known to be free of specific pathogens**   *Risk from these materials to laboratorians is similar to that experienced by the general public: nuisance due to consequences of escape and temporary or permanent establishment. Consequently, the public health risk is likely to be low unless epidemiological conditions exist that could reasonably be expected to result in an increase in transmission of an endemic disease in that particular region, or establishment of the released vector leads to the significant risk of future transmission potential for an exotic pathogen. In the event that establishment is likely, the arthropod must be handled under more stringent containment conditions.\** |

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| **Question:** | | **Arthropod Species:**  **Known Agents:** | | **Arthropod Species:**  **Known Agents:** | | **Arthropod Species:**  **Known Agents:** |
| **F.1 Is the arthropod species already established in the locale?** | **NO**  **YES** | | **NO**  **YES** | | **NO**  **YES** | |
| **F.2 If the arthropod is exotic, is it likely that the arthropod would become temporarily or permanently established in the event of accidental escape?** | **Temporary**  **Permanent**  **N/A** | | **Temporary**  **Permanent**  **N/A** | | **Temporary**  **Permanent**  **N/A** | |
| **F.3.a Are the agents that the arthropod is known to transmit cycling in the locale**  **F.3.b Has the agent been present in the past?** | **NO**  **YES**  **NO**  **YES** | | **NO**  **YES**  **NO**  **YES** | | **NO**  **YES**  **NO**  **YES** | |
| **F.4 Are agents that the arthropod could reasonably be expected to transmit to animals present in the locale?** | **NO**  **YES** | | **NO**  **YES** | | **NO**  **YES** | |
| **F.5 Would the accidental release of the arthropod significantly increase the risk to humans and animals above that already in existence in the event of introduction of exotic pathogens in the area?** | **NO**  **YES** | | **NO**  **YES** | | **NO**  **YES** | |
| **F.6 In the case of zoonotic diseases, does the animal reservoir exist in the locale, and, if so, what is it infection status?** | **NO**  **YES** | | **NO**  **YES** | | **NO**  **YES** | |
| **F.7 Could the arthropod be controlled or locally eradicated by traditional methods (e.g. spraying, trapping) in the event of escape?** | **NO**  **YES** | | **NO**  **YES** | | **NO**  **YES** | |
| **F.8 Was the exotic arthropod derived from a subpopulation (strain, geographically distinct form) whose phenotype is known or suspected to vary in ways that could reasonably be expected to significantly increase its vector competence? If so, it should be handled under the more stringent conditions within ACL-2 (described below) even if uninfected** | **NO**  **YES** | | **NO**  **YES** | | **NO**  **YES** | |
| **F.9 Are disabled strains available whose viability after escape would be limited (e.g. eye color**  **mutants, cold-sensitive)?** | **NO**  **YES** | | **NO**  **YES** | | **NO**  **YES** | |

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| 1. **Risk Assessment: Arthropods containing unknown infectious agents or whose status is uncertain**   *Arthropods that are known to be, or suspected of being, infected with infectious agents always have risks that must be identified, and appropriate precautions must be taken for a worker and public health safety. The characteristics of most known infectious agents have been well defined and are the starting point for determining risk from these arthropods. Information useful to risk assessment can be obtained from laboratory investigations, disease surveillance, and epidemiological studies. Infectious agents known to have caused laboratory-associated infections are included in the BMBL agent summary statements (Section VII)\** |

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| **Question:** | | **Arthropod Species:**  **Known Agents:** | | **Arthropod Species:**  **Known Agents:** | | **Arthropod Species:**  **Known Agents:** |
| **G.1 Why is an infectious agent suspected?** |  | |  | |  | |
| **G.2 What route of transmission is indicated?** |  | |  | |  | |
| **G.3 Are agents that the arthropod transmits transferred horizontally?** |  | |  | |  | |
| **G.4 Are there reasons to believe that a novel or unknown agent is present?** |  | |  | |  | |
| **G.5 What epidemiologic data are available?** |  | |  | |  | |
| **G.6 What is the morbidity or mortality rate associated with the agent?** |  | |  | |  | |

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| 1. **Risk Assessment: Vector Arthropods containing recombinant DNA molecules**   *The purpose of this section is to present principles of risk assessment of vector arthropods that have been genetically modified, typically via recombinant DNA technology. This includes both vector arthropods that contain modified microbes or which themselves are genetically modified. These principles primarily address the public health significance of the modified organisms rather than environmental concerns. These technologies continue to evolve rapidly, and experimental procedures designed to derive novel modified symbionts and recombinant arthropods are becoming commonplace.\** |

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| **Question:** | | **Arthropod Species:**  **Known Agents:** | | **Arthropod Species:**  **Known Agents:** | | **Arthropod Species:**  **Known Agents:** |
| **H.1 Does the inserted gene encode a product known or likely to alter the vector capacity or competence for pathogens it is known to transmit?** | **NO**  **YES** | | **NO**  **YES** | | **NO**  **YES** | |
| **H.2 Does the inserted gene cause phenotypic changes that could significantly affect the ability to control the arthropod if there were an accidental escape, e.g., an insecticide resistance marker?** | **NO**  **YES** | | **NO**  **YES** | | **NO**  **YES** | |
| **H.3 Does the modification have the potential to alter the range or seasonal abundance of the arthropod?** | **NO**  **YES** | | **NO**  **YES** | | **NO**  **YES** | |
| **H.4 If so, would the new range increase the likelihood that the vector could transmit new pathogens?** | **NO**  **YES**  **N/A** | | **NO**  **YES**  **N/A** | | **NO**  **YES**  **N/A** | |
| **H.5 Is the modified strain disabled in a way that viability after escape would be limited**  **(e.g. eye-color mutants, cold-sensitive)?** | **NO**  **YES** | | **NO**  **YES** | | **NO**  **YES** | |

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| **H.6 Does the modification have the potential to increase the reproductive capacity of the arthropod that carries it?** | **NO**  **YES** | **NO**  **YES** | **NO**  **YES** |
| **H.7 Is the phenotype conferred by the modification, including its marker and other expressed genes, if any, consistently expressed after numerous generations of propagation?** | **NO**  **YES** | **NO**  **YES** | **NO**  **YES** |
| **H.8 Is the modification undergoing rearrangement or other mutation at a measurable rate?** | **NO**  **YES** | **NO**  **YES** | **NO**  **YES** |
| **H.9 Can the DNA transgene vector be mobilized in natural populations?** | **NO**  **YES** | **NO**  **YES** | **NO**  **YES** |
| **H.10 Is the host range of the symbiont known?** | **NO**  **YES** | **NO**  **YES** | **NO**  **YES** |
| **H.11 Would the modified symbiont pose an increased risk to immunocompromised persons relative to the native symbiont?** | **NO**  **YES** | **NO**  **YES** | **NO**  **YES** |
| **H.12 Is the entire sequence of the DNA insertion known, and are the coding sequences defined?** | **NO**  **YES** | **NO**  **YES** | **NO**  **YES** |

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| **H.13 Is horizontal transfer of the transgene to other microbes with which the modified microbe is likely to come into contact possible?** | **NO**  **YES** | **NO**  **YES** | **NO**  **YES** |
| **H.14 Is the original insertion site known so that stability can be assessed later?** | **NO**  **YES** | **NO**  **YES** | **NO**  **YES** |