



Questions & Answers

Working with Microorganisms Developed Using Genetic Engineering Under 7 CFR part 340

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Overview

APHIS regulates the importation, interstate movement, and environmental release of microorganisms developed using genetic engineering (modified microorganisms) that could pose a plant pest risk under 7 CFR part 340. Regulated microorganisms include plant pests, biological control organisms, and other microbes that could pose a plant pest risk.

Unless otherwise specified, importation and interstate movement are collectively referred to as “move” or “movement” in this document. Environmental release is also called a “confined field trial.”

Q: What microorganisms are regulated under 7 CFR part 340?

A: APHIS regulates modified microorganisms that are plant pests or that could pose a plant pest risk. The regulations (7 CFR § 340.2) require a permit for the movement or environmental release of any modified microorganism that:

- Meets the definition of a plant pest (7 CFR § 340.3); or
- Is not a plant but has received deoxyribonucleic acid (DNA) from a plant pest and the DNA from the donor organism either is capable of producing an infectious agent that causes plant disease or encodes a compound that is capable of causing plant disease; or
- Is a microorganism used to control plant pests and could pose a plant pest risk.

If you are uncertain whether your modified microorganism is subject to the regulations at 7 CFR part 340, please send an email to biotechquery@usda.gov.

Q: When submitting a question to biotechquery@usda.gov, is there certain information I should include in my message?

A: Yes. It is helpful to provide the following information:

- The organism's genus and species.
- Construct components and donors: Genus and species of the organism(s) from which the genetic material was obtained.
- Construct components: Detailed description of functions.
- The phenotype or intended trait expected from the modification.

Q: Are any modified microorganisms exempt from the BRS permit requirements?

A: Yes.

- You do not need a permit to import or move interstate disarmed *Agrobacterium spp.* developed using genetic engineering if (1) it is moved as a secure shipment, (2) the modified genetic material is stably integrated into the genome, and (3) the modified material does not include the complete infectious genome of a plant pest. Note: There is no permit exemption for the environmental release of disarmed *Agrobacterium spp.* (7 CFR § 340.5(d)).
- You do not need a permit for the movement or environmental release of microbial pesticides if you are undertaking such activities with a modified microorganism product that is (1) currently registered with the Environmental Protection Agency (EPA) as a microbial pesticide, and (2) not a plant pest. (7 CFR § 340.5(f))

Q: Is a BRS permit required for modified microorganism used to control plant pests?

A: Yes, in some cases. You need a permit for the movement or environmental release of a modified microorganism used to control plant pests that could pose a plant pest risk.

If you are uncertain whether your modified microorganism is subject to regulation under 7 CFR part 340, please send an email to biotechquery@usda.gov.

Q: Is a BRS permit required for modified bacterial cells expressing insecticidal proteins?

A: Yes. You need a permit for the movement or environmental release of bacterial cells modified to express insecticidal proteins unless they are (1) currently registered with the EPA as a microbial pesticide, and (2) are not a plant pest.

Q: Is a BRS permit required for purified proteins used to control plant pests?

A: No. You do not need a permit in this instance because the proteins are not an active, infective, or dormant stage of life form of an entity characterized as living.

Q: Is a BRS permit required for *Escherichia coli* genotype K-12 or modified *Saccharomyces cerevisiae*?

A: No, in most cases. You only need a permit for the movement or environmental release of modified *E. coli* genotype K-12 or modified *S. cerevisiae* if: (1) it has received DNA from a plant pest, and the DNA is capable of producing an infectious agent or encodes a compound that causes plant disease; or (2) it has been modified to control plant pests and poses a plant pest risk.

Q: Is a BRS permit required to move modified *Bacillus subtilis*?

A: Yes. You need a permit for the movement and environmental release of modified *B. subtilis*.

Q: Is a BRS permit required for plasmids?

A: No, in most cases. You only need a permit for the movement or environmental release of modified plasmid if (1) it has received DNA from a plant pest, and (2) the DNA from the donor organism is capable of producing an infectious agent that causes plant disease or encodes a compound that is capable of causing plant disease or control plant pests.

Q: Is a BRS permit required for infectious clones of plant viruses?

A: Yes. You need a permit for the movement or environmental release of a modified infectious clone of a plant virus because it meets the definition of a plant pest.

Q: Is a BRS permit required for non-infectious purified DNA/RNA of a plant virus?

A: No. You do not need a permit for the movement or environmental release of non-infectious purified DNA/RNA of a plant virus because it (1) is not a plant pest, (2) is not inherently infectious or causes plant disease, and (3) does not pose plant pest risks.

Q: Is a BRS permit required for a modified microorganism that does not meet the criteria in 7 CFR § 340.2(b-d), but that has been modified to express a fluorescent marker, i.e., green fluorescent protein (GFP)?

A: No. You do not need permit for this type of modified microorganism because it is not a plant pest and fluorescent markers are not compounds capable of causing plant disease.

Q: If a microorganism is not modified using genetic engineering (i.e., techniques that use recombinant, synthesized, or amplified nucleic acids to modify or create a genome, including genome editing) and I want to import it, move it interstate, or release it into the environment—who do I contact?

A: If your microorganism is *not modified using genetic engineering*, please check with the following resources, as appropriate:

- For questions about plant pests, plant pathogens, or biological control agents please visit the **APHIS Plant Protection and Quarantine** contact page to get the appropriate information at: <https://www.aphis.usda.gov/aphis/ourfocus/planthealth/ppq-contact>.
- For questions about animal biologics please visit the **APHIS Veterinary Services** page to determine the appropriate contact at: <https://www.aphis.usda.gov/aphis/ourfocus/animalhealth/veterinary-biologics>.
- For questions related to microorganisms that control pests (microbial pesticides) please contact **Environmental Protection Agency** at BPPDQuestions@epa.gov.
- For requests related to microorganisms that produce select agents and toxins that can cause disease in humans contact **Centers for Disease Control and Prevention** Division of Select Agents and Toxins at 404-718-2000; email: LRSAT@cdc.gov; and for those that can cause

disease in animals and plants contact **APHIS Division of Agricultural Select Agents and Toxins** at 301-851-2070; email: DASAT@usda.gov.

Q: Is conducting research with a modified microorganism in a contained greenhouse considered a release into the environment?

A: No. Conducting research with a modified microorganism in a contained structure, such as a greenhouse, is not considered an environmental release if the structure is a contained facility. When determining whether a structure is a contained facility, BRS may consider whether APHIS Plant Protection and Quarantine has authorized work for the same or biologically similar non-modified microorganism and/or BRS may conduct an inspection to assess whether the structure meets the conditions for a contained facility.

For questions pertaining to research with modified microorganisms in contained structures, please contact biotechquery@usda.gov.

Q: What are the timelines for approval or denial of a permit?

A: Except in circumstances that could not reasonably have been anticipated, once BRS receives a complete application, BRS will generally approve or deny a permit within:

- 45 days for interstate movement or for importation; or
- 120 days for an environmental release (unless an environmental assessment or environmental impact statement is necessary).

Q: When will BRS conduct an environmental review before issuing a permit?

A: If a permit for an environmental release of a modified microbe involves a new species or organism or a novel modification that raises new issues and/or has the potential for significant environmental impacts resulting from the issuance of permits, BRS will conduct an environmental review. Depending on the circumstances, BRS prepares an Environmental Assessment (EA) or Environmental Impact Statement (EIS) prior to making decisions about issuing a permit, following the agency's applicable regulations found at [7 CFR part 372](#).

Q: Where can I find information on marking and justifying claims of confidential business information (CBI) in an application?

A: BRS maintains [CBI submission guidance](#) on its website.

Q: Must I submit every construct and element (promoter/gene/terminator) in my permit application?

A: Yes. Permit applications must include all construct components and donors used, including the genus and species of the organism(s) from which the genetic material was obtained.

Q: What information do I provide for a permit application?

A: The regulations (7 CFR § 340.5) list the minimum requirements for a BRS permit application. BRS maintains a [guide on the permitting process](#) on its website (including information requirements, suggestions for standard operating procedures (SOPs), and a quick reference guide).

Below, are the information requirements for permit applications involving interstate movement, import, or environmental release. For environmental release permit applications, BRS encourages developers to request pre-submission consultations to ensure the application contains complete information to promote timely review and processing.

All permit applications require:

- 1) Name, title, and contact information of the responsible person and agent (if any).
- 2) The country (or countries) and locality (or localities) where the organism was collected, developed, manufactured, reared, cultivated, and cultured (as applicable).
- 3) The organism's genus, species, and common name (if applicable). For microorganisms this includes strain, cultivar, or pathovar (as applicable).
- 4) The intended activity (i.e., importation, interstate movement, or environment release).
- 5) Information on the intended trait and its genotype (including modification method, construct components (with detailed description of functions), and donors (genus and species of the organism(s) from which the genetic material was obtained).

To ensure your application is complete, please also provide the following information to demonstrate a contained movement or confined field trial as applicable to your activity:

- 1) The quantity of the modified organism, the method of shipment and means of ensuring the security of the shipment against unauthorized release of the organism.
- 2) How you will dispose of packaging material, shipping containers, and any other material accompanying the organism to prevent unauthorized release.
- 3) For interstate movements or imports, provide the origin and destination of the modified organism, including addresses and contact details of the sender and recipient.
- 4) For environmental releases of modified organisms, include information on all proposed environmental release sites, including land area (size), Global Positioning System (GPS) coordinates, addresses, and land use history of the site and adjacent areas; and the name and contact information of a person at each environmental release site, if different from the responsible person.

The BRS guide on the permitting process can help you develop containment/confinement protocols specific to your activity (importation, interstate movement, or environmental release). For example, SOPs for environmental releases of microorganisms should include:

- Purpose for the release, including a description of the proposed experimental design.
- Confinement protocols to include locations where material removed from the field site may be evaluated or stored.
- Description of how you will maintain the modified microorganism at the release site and to prevent the spread and persistence after the termination of a field trial.
- Description of a diagnostic test developed for identification and monitoring.

- Description of the monitoring duration and frequency to ensure that modified microorganisms will not persist in the environment and a description of methods that will be used for final devitalization.

Q: What information do I provide to demonstrate the efficacy of a diagnostic test that will be used to meet identification and monitoring conditions for an environmental release permit?

A: Diagnostic assays should detect the modified microbe in field-derived samples. Although the limit of detection (LOD) of the assay(s) can be determined in controlled settings, the diagnostic method must be able to detect the modified microbe in field-derived samples.

At a minimum there should be data supporting the specificity (true positives) and selectivity (true negatives) of the assay for the taxon of host and microorganism for which it is developed. Specificity should demonstrate the assay's ability to detect all applicable modified strains in both simple and complex matrices (e.g., with and without the host) to exclude false negatives. Selectivity includes healthy host tissue (e.g., control plants), closely related microbial species, unrelated microorganisms (e.g., common pathogens), and microbial taxa that may be found as part of the host microbiota.

Q: Who do I contact for help with APHIS eFile when submitting a new permit application?

A: BRS maintains a guide on the permitting process, [APHIS eFile users guide](#), on its website and a training module on using the system. If these resources do not resolve your questions, please contact BRS.eFile@usda.gov.

Q: How do I add a new organism in APHIS eFile?

A: Contact BRS.eFile@usda.gov for assistance with adding new microorganisms in APHIS eFile.