and Local Notice to Mariners. Such notifications will include the date and time that enforcement is suspended as well as the date and time that enforcement will resume.

(3) Violations of this regulated navigation area should be reported to the COTP, at 203–468–4401 or on VHF–Channel 16. Persons in violation of this regulated navigation area may be subject to civil or criminal penalties.

Dated: August 22, 2012.

D.B. Abel,

Rear Admiral, U.S. Coast Guard, Commander, First Coast Guard District.

[FR Doc. 2012–21760 Filed 9–4–12; 8:45 am]

BILLING CODE 9110–04–P

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 725

[EPA–HQ–OPPT–2011–0740; FRL–9348–1]

RIN 2070–AJ65

Microorganisms; General Exemptions From Reporting Requirements; Revisions to Recipient Organisms Eligible for Tier I and Tier II Exemptions

AGENCY: Environmental Protection Agency (EPA).

ACTION: Proposed rule.

SUMMARY: EPA received petitions to add *Trichoderma reesei* and *Bacillus amyloliquefaciens* to the list of microorganisms that may be used as recipient microorganisms in order to qualify for the exemption from full notification and reporting procedures under the Toxic Substances Control Act (TSCA) for new microorganisms that are being manufactured for introduction into commerce. Based on EPA's evaluation of these petitions, EPA has made a preliminary determination that certain strains of both microorganisms will not present an unreasonable risk of injury to health or the environment when used as a recipient microorganism provided that certain criteria for the introduced genetic material and the physical containment conditions are met. Therefore, EPA is proposing to add two additional microorganisms to the list of recipient microorganisms that are eligible for exemptions from full reporting for the manufacture (including import) of new microorganisms.

DATES: Comments must be received on or before November 5, 2012.

You may submit a request for an opportunity to present oral comments in writing on or before October 5, 2012, and if a written request is received by EPA, an informal public hearing will be held on this proposed rule in Washington, DC. For further information on the informal public hearing, see Unit I.C.

ADDRESSES: Submit your written request for an opportunity to present oral comments, identified by docket identification (ID) number EPA–HQ–OPPT–2011–0740, to the mailing or hand delivery addresses in this unit.

Submit your comments, identified by docket ID number EPA–HQ–OPPT–2011–0740, by one of the following methods:

- *Federal eRulemaking Portal: http://www.regulations.gov.* Follow the online instructions for submitting comments.
- *Mail:* Document Control Office (7407M), Office of Pollution Prevention and Toxics (OPPT), Environmental Protection Agency, 1200 Pennsylvania Ave. NW., Washington, DC 20460–0001.
- *Hand Delivery:* OPPT Document Control Office (DCO), EPA East Bldg., Rm. 6428, 1201 Constitution Ave., NW., Washington, DC. Attention: Docket ID Number EPA–HQ–OPPT–2011–0740. The DCO is open from 8 a.m. to 4 p.m., Monday through Friday, excluding legal holidays. The telephone number for the DCO is (202) 564–8930. Such deliveries are only accepted during the DCO's normal hours of operation, and special arrangements should be made for deliveries of boxed information.

Instructions: Direct your comments to docket ID number EPA–HQ–OPPT–2011–0740. EPA's policy is that all comments received will be included in the docket without change and may be made available online at *http://www.regulations.gov,* including any personal information provided, unless the comment includes information claimed to be Confidential Business Information (CBI) or other information whose disclosure is restricted by statute. Do not submit information that you consider to be CBI or otherwise protected through regulations.gov or email. The regulations.gov Web site is an ''anonymous access'' system, which means EPA will not know your identity or contact information unless you provide it in the body of your comment. If you send an email comment directly to EPA without going through regulations.gov, your email address will be automatically captured and included as part of the comment that is placed in the docket and made available on the Internet. If you submit an electronic comment, EPA recommends that you include your name and other contact information in the body of your comment and with any disk or CD–ROM you submit. If EPA cannot read your comment due to technical difficulties and cannot contact you for clarification, EPA may not be able to consider your comment. Electronic files should avoid the use of special characters, any form of encryption, and be free of any defects or viruses.

Docket: All documents in the docket are listed in the docket index available at *http://www.regulations.gov.* Although listed in the index, some information is not publicly available, e.g., CBI or other information whose disclosure is restricted by statute. Certain other material, such as copyrighted material, will be publicly available only in hard copy. Publicly available docket materials are available electronically at *http://www.regulations.gov*, or, if only available in hard copy, at the OPPT Docket. The OPPT Docket is located in the EPA Docket Center (EPA/DC) at Rm. 3334, EPA West Bldg., 1301 Constitution Ave. NW., Washington, DC. The EPA/DC Public Reading Room hours of operation are 8:30 a.m. to 4:30 p.m., Monday through Friday, excluding legal holidays. The telephone number of the EPA/DC Public Reading Room is (202) 566–1744, and the telephone number for the OPPT Docket is (202) 566–0280. Docket visitors are required to show photographic identification, pass through a metal detector, and sign the EPA visitor log. All visitor bags are processed through an X-ray machine and subject to search. Visitors will be provided an EPA/DC badge that must be visible at all times in the building and returned upon departure.

FOR FURTHER INFORMATION CONTACT: *For technical information contact:* Brian Lee, Chemical Control Division (7405M), Office of Pollution Prevention and Toxics, Environmental Protection Agency, 1200 Pennsylvania Ave., NW., Washington, DC 20460–0001; telephone number: (202) 564–6293; email address: *lee.brian@epa.gov.*

For general information contact: The TSCA-Hotline, ABVI-Goodwill, 422 South Clinton Ave., Rochester, NY 14620; telephone number: (202) 554–1404; email address: *TSCA-Hotline@epa.gov.*

SUPPLEMENTARY INFORMATION:

I. General Information

A. Does this action apply to me?

You may be potentially affected by this action if you produce, import, process, or use either intergeneric *Trichoderma reesei* or intergeneric *Bacillus amyloliquefaciens.* Potentially affected entities may include, but are not limited to:

• Basic Chemical Manufacturing (NAICS code 3251).

• Pesticide, Fertilizer and other Agricultural Chemical manufacturing (NAICS code 3253).

• Other Chemical Product and Preparation Manufacturing (NAICS code 3259).

This listing is not intended to be exhaustive, but rather provides a guide for readers regarding entities likely to be affected by this action. Other types of entities not listed in this unit could also be affected. The North American Industrial Classification System (NAICS) codes have been provided to assist you and others in determining whether this action might apply to certain entities. If you have any questions regarding the applicability of this action to a particular entity, consult the technical person listed under **FOR FURTHER INFORMATION CONTACT**.

B. What should I consider as I prepare my comments for EPA?

1. *Submitting CBI.* Do not submit this information to EPA through regulations.gov or email. Clearly mark the part or all of the information that you claim to be CBI. For CBI information in a disk or CD–ROM that you mail to EPA, mark the outside of the disk or CD–ROM as CBI and then identify electronically within the disk or CD–ROM the specific information that is claimed as CBI. In addition to one complete version of the comment that includes information claimed as CBI, a copy of the comment that does not contain the information claimed as CBI must be submitted for inclusion in the public docket. Information so marked will not be disclosed except in accordance with procedures set forth in 40 CFR part 2.

2. *Tips for preparing your comments.* When submitting comments, remember to:

i. Identify the document by docket ID number and other identifying information (subject heading, **Federal Register** date and page number).

ii. Follow directions. The Agency may ask you to respond to specific questions or organize comments by referencing a Code of Federal Regulations (CFR) part or section number.

iii. Explain why you agree or disagree; suggest alternatives and substitute language for your requested changes.

iv. Describe any assumptions and provide any technical information and/or data that you used.

v. If you estimate potential costs or burdens, explain how you arrived at your estimate in sufficient detail to allow for it to be reproduced.

vi. Provide specific examples to illustrate your concerns and suggest alternatives.

vii. Explain your views as clearly as possible, avoiding the use of profanity or personal threats.

viii. Make sure to submit your comments by the comment period deadline identified.

C. Can I request an opportunity to present oral comments to the agency?

You may submit a request for an opportunity to present oral comments. This request must be made in writing and be identified by docket ID number EPA–HQ–OPPT–2011–0740. This written request must be submitted to the mailing or hand delivery addresses provided under **ADDRESSES**. If such a request is received on or before October 5, 2012, EPA will hold an informal public hearing on this proposed rule in Washington, DC. If such a request is received, EPA will announce the scheduling of the informal public hearing in a subsequent document in the **Federal Register**. If an informal public hearing is announced, and if you are interested in attending or presenting oral and/or written comments at the informal public hearing, you should follow the instructions provided in the subsequent **Federal Register** document announcing the informal public hearing.

II. Background

A. What action is the agency taking?

EPA received petitions to add *Trichoderma reesei* and *Bacillus amyloliquefaciens* to the list of recipient microorganisms at § 725.420 that are eligible for the regulatory exemptions applicable to new microorganisms that are manufactured for introduction into commerce (Refs. 1–3). EPA has made a preliminary determination that both of the microorganisms, with certain limitations, meet the criteria for addition to the list—i.e., they will not present an unreasonable risk of injury to health or the environment provided that the other conditions of the exemptions at 40 CFR part 725, subpart G, relating to the introduced genetic material, and the physical containment of the new microorganisms, have been met. Therefore, this document proposes to grant the exemption petition for these two microorganisms.

EPA is proposing to restrict the exemption for *Trichoderma reesei* to the *Trichoderma reesei* strain QM6a and its derivatives (hereafter, *T. reesei* QM6a). In addition, EPA is proposing to restrict the *T. reesei* QM6a exemption to use under submerged standard industrial fermentation conditions; as described in this proposed rule, these conditions are typical throughout industry and would also meet the existing physical containment and control requirements for the tiered exemptions under § 725.422. EPA would also restrict the *T. reesei* QM6a exemption to fermentation operations in which no solid plant material or insoluble substrate is present in the fermentation broth. EPA is also proposing to require that any fermentation of solid plant material or insoluble substrate may only be initiated after the inactivation of *T. reesei* QM6a by a procedure that meets the existing requirements in § 725.422(d), i.e., by a procedure that has been demonstrated and documented to be effective in reducing the viable microbial population by at least 6 logs.

Additionally, EPA is proposing to limit the exemption for *B. amyloliquefaciens* to only industrial strains of *Bacillus amyloliquefaciens* that would fall into the subspecies *Bacillus amyloliquefaciens* subsp. *amyloliquefaciens* (hereafter, *B. amyloliquefaciens*).

B. What is the agency's legal authority for taking this action?

This action is being taken under the authority of TSCA section 5(h)(4) (15 U.S.C. 2604(h)(4)).

Section 5(a)(1) of TSCA requires that persons notify EPA at least 90 days before they manufacture (the term ''manufacture'' includes import under TSCA) for commercial purposes a ''new'' chemical substance, or manufacture (including import) or process a chemical substance for a ''significant new use.'' TSCA defines ''chemical substance'' broadly and in terms that cover intergeneric microorganisms as well as traditional chemical substances. Therefore, for the purposes of TSCA, a ''new microorganism,'' like a ''new chemical substance,'' is one that is not listed on the TSCA Chemical Substances Inventory (TSCA Inventory) compiled under TSCA section 8(b). Section 5(h)(4) of TSCA authorizes EPA, upon application and by rule, to exempt the manufacturer or importer of any new chemical substance from part or all of the provisions of TSCA section 5, if EPA determines that the manufacture, processing, distribution in commerce, use, or disposal of the new chemical substance will not present an unreasonable risk of injury to human health or the environment.

C. Existing EPA Regulatory Requirements and Exemption Standard

Manufacturers are required to report certain information to EPA 90 days

before commencing the manufacture of intergeneric microorganisms that are not listed on the TSCA Inventory. EPA regulations at 40 CFR part 725 establish the mechanisms for reporting this information.

Any manufacturer of a living intergeneric microorganism who is required to report under TSCA section 5 must file a Microbial Commercial Activity Notice (MCAN) with EPA, unless the activity is eligible for one of the specific exemptions. The general procedures for filing MCANs are described in 40 CFR part 725, subpart B.

EPA regulations establish two exemptions for new microorganisms, after the research and development stage, which are being manufactured for introduction into commerce: The Tier I and Tier II exemptions.

Under the Tier I exemption, if three criteria are met, manufacturers are only required to notify EPA that they are manufacturing a new microorganism that qualifies for this exemption 10 days before commencing manufacture, and to keep certain records. 40 CFR 725.400. To qualify for the Tier I exemption, a manufacturer must use one of the recipient organisms listed in § 725.420, and must implement specific physical containment and control technologies. In addition, the genetic material introduced into the recipient microorganism must be well-characterized, limited in size, poorly mobilizable, and free of certain sequences. 40 CFR 725.421.

A manufacturer who otherwise meets the conditions of the Tier I exemption may modify the specified containment restrictions, but must submit a Tier II exemption notification. 40 CFR 725.428. The Tier II exemption requires manufacturers to submit an abbreviated notification describing the modified containment, and provides for a 45 day period, during which EPA would review the proposed containment. 40 CFR 725.450 and 725.470. The manufacturer may not proceed under this exemption until EPA approves the exemption. 40 CFR 725.470.

EPA established a petition process at § 725.67 to provide a mechanism for the public to propose additional microorganisms as candidates for the tiered exemptions.

Section 725.67 directs a petitioner to submit information to demonstrate that ''any activities affected by the requested exemption will not present an unreasonable risk of injury to health or the environment.'' 40 CFR 725.67(a)(2). In addition, a petitioner is responsible to provide supporting information for this determination in four general categories:

1. The effects of the new microorganism on health and the environment.

2. The magnitude of exposure of human beings and the environment to the new microorganism.

3. The benefits of the new microorganism for various uses and the availability of substitutes for such uses.

4. The reasonably ascertainable economic consequences of granting or denying the petition, including effects on the national economy, small business, and technological innovation.

Section 725.67 also specifies that when applying to list a recipient microorganism for the tiered exemption under § 725.420, petitioners should include information addressing six specified criteria, which EPA will use to evaluate the microorganism for listing. 40 CFR 725.67(a)(3)(iii). The six criteria are:

- Identification and classification of the microorganism using available genotypic and phenotypic information.
- Information to evaluate the relationship of the microorganism to any other closely related microorganisms which have a potential for adverse effects on health or the environment.
- A history of safe commercial use for the microorganism.
- Commercial uses indicating that the microorganism products might be subject to TSCA.
- Studies which indicate the potential for the microorganism to cause adverse effects to health or the environment.
- Studies which indicate the survival characteristics of the microorganism in the environment.

III. EPA's Evaluation of Available Information on the Proposed Microorganisms for the Criteria Delineated in § 725.67

Pursuant to § 725.67, Genencor International, Inc., (subsequently supported by the Enzyme Technical Association (ETA)) and Novozymes North America, Inc., submitted Letters of Application to EPA requesting that *Trichoderma reesei* and *Bacillus amyloliquefaciens* (Refs. 1 and 2) be added to § 725.420 as candidate recipient microorganisms for the tiered exemptions. The letters of application provided information that the submitters believed demonstrate that activities affected by the requested exemptions would not present an unreasonable risk of injury to health or the environment. Information regarding the criteria specified in §§ 725.67(a)(2) and 725.67(a)(3)(iii) were addressed in these letters of application to list *Trichoderma reesei* and *Bacillus amyloliquefaciens* as recipient microorganisms under § 725.420.

EPA has made a preliminary determination based on the information provided in the Letters of Application (Refs. 1 and 2), supplemental information provided by ETA (Refs. 4 and 5), and other information available to EPA that *T. reesei* QM6a, with certain restrictions, and *B. amyloliquefaciens* will not present an unreasonable risk of injury to health or the environment when used as a recipient microorganism provided the existing criteria for the introduced genetic material and for physical containment conditions at § 725.422 are met. EPA's Risk Assessments for these two microorganisms (Refs. 6 and 7) are available in the docket. This unit presents a summary of EPA's evaluation of the available information pertinent to the six criteria delineated in § 725.67(a)(3)(iii) for both microorganisms. These criteria follow:

- Identification and classification of the microorganism using available genotypic and phenotypic information.
- Information to evaluate the relationship of the microorganism to any other closely related microorganisms that have a potential for adverse effects on health or the environment.
- A history of safe commercial use for the microorganism.
- Commercial uses indicating that the microorganism products might be subject to TSCA.
- Studies which indicate the potential for the microorganism to cause adverse effects to health or the environment.
- Studies which indicate the survival characteristics of the microorganism in the environment.

Units V. and VI. summarize EPA's evaluation of the information relating to the criteria delineated in § 725.67(a)(2) that address hazard, exposure, benefits, and economic consequences. Specifically:

- The effects of the new microorganism on health and the environment.
- The magnitude of exposure of human beings and the environment to the new microorganism.
- The benefits of the new microorganism for various uses and the availability of substitutes for such uses.
- The reasonably ascertainable economic consequences of granting or denying the exemption, including effects on the national economy, small business, and technological innovation.

Unit V. provides a summary of EPA's assessments of the risks to health and

the environment for both microorganisms. EPA's Risk Assessment documents (Refs. 6 and 7) provide more detailed information, and supporting references, for EPA's evaluation of the available information and the potential risks to health and the environment. Unit VI. provides a summary of EPA's assessments of the economic benefits and consequences of adding both microorganisms to § 725.420.

A. Evaluation of Available Information Relevant to the Criteria at § 725.67 for T. reesei QM6a as a Recipient Microorganism With Specified Conditions of Growth

1. *Identification and classification of the microorganism using available genotypic and phenotypic information. T. reesei* is a fungus originally isolated in the Solomon Islands in 1944. *T. reesei* is a hypercellulolytic fungus found on deteriorating military fabrics such as tents and clothing. This isolate, designated as QM6a, was initially named *Trichoderma viride.* Approximately 20 years later, QM6a was re-classified as *Trichoderma reesei.*

Trichoderma reesei is the species name given to the anamorphic form (this form reproduces asexually) of the fungus whose telemorphic form (this form reproduces sexually) is now understood to be *Hypocrea jecorina.*

Recent taxonomic studies have shown that the species *T. reesei* consists only of this single isolate QM6a and its derivatives. Many other strains called *T. reesei* isolated elsewhere have now been proposed as belonging to a newly named species, *T. parareesei,* based on differences in habitat, sporulation, and metabolic versatility. *T. reesei* has been shown to belong to a single species now referred to as *H. jecorina/T. reesei* (QM6a) which reflects its relationship to its teleomorph *H. jecorina.* The only anamorphic strains within the species *H. jecorina/T. reesei* are those of QM6a and its derivatives. The petition to add *T. reesei* to the list of microorganisms at § 725.420 requested that EPA include all strains of *T. reesei.* However, given these recent taxonomic publications, all fungal strains correctly named *T. reesei* are, by definition, QM6a or a derivative.

Adequate genotypic and phenotypic information is available for classification of *T. reesei* QM6a and its derivatives. The American Type Culture Collection (ATCC) designation for this original strain of *T. reesei* QM6a is ATCC 13631.

2. *Information to evaluate the relationship of the microorganism to any other closely related microorganisms that have a potential for adverse effects on health or the environment.* The petition to add *T. reesei* to the list of microorganisms at § 725.420 requested that EPA include all strains of *T. reesei.* Closely related members of section *Longibrachiatum* do not have a potential for adverse effects; other less closely related *Trichoderma* species have a potential to cause adverse effects as pathogens of commercially produced mushrooms. These less closely related species include various species of the Harzianum clade, *T. aggressivum, T. pleuotrophilum,* and *T. fulvidum* that are responsible for significant loss of the mushroom crops of *Agaricus bisporus* and *Pleurotus ostreatus.*

T. reesei/H. jecorina can be distinguished from other *Trichoderma* species by a comprehensive approach employing criteria of the Genealogical Concordance Phylogenetic Species Recognition (GCPSR) concept, which commonly requires the use of genealogies of three or four genes, not just the sequences of spacer regions as previously utilized for identification. Use of the GCPSR protocol will separate *T. reesei* (sensu lato) from the opportunistic pathogens within the section *Longibrachiatum,* including *T. longibrachiatum* and *T. citronoviridae/H. schweinitzii,* as well as the mold disease pathogens of mushrooms.

3. *A history of safe commercial use for the microorganism. T. reesei* QM6a has a long history of safe use producing a variety of commercial enzymes. *T. reesei* QM6a cellulases, beta-glucanases, and xylanases are used by the animal feed, baking, beverages, textile processing, detergent, pulp and paper, industrial chemicals, and biofuels industries.

For industrial enzyme production, *T. reesei* is generally grown in a closed, submerged fermentation system. In submerged fermentation, growth of the microorganism occurs beneath the surface of the liquid growth medium. As described in this unit, this type of fermentation system appears to be typical throughout the industry, based on EPA's review of MCAN submissions over the years. This type of fermentation system would also comply with the existing tiered exemption requirements relating to physical containment and control technologies, which are laid out in § 725.422.

Under this type of fermentation system, the fermentation broth is a defined mixture of carbon and nitrogen sources, minerals, salts, and other nutrients, is maintained at optimal pH and temperature, and is typically aerated and mixed with no solid plant material or insoluble substrate present. These conditions support the active growth and productivity of the organisms. Submerged fermentation systems reduce the potential for exposure of workers to the production organism and fermentation broth aerosols, reduce the potential for contamination of the culture and make the collection of extracellular enzyme simpler and less costly. The fermentation process is terminated before the *T. reesei* QM6a organisms go into the stationary growth phase (i.e., before secondary metabolism begins). At the end of the fermentation process, the production organisms are separated from the fermentation broth and inactivated. Throughout the **SUPPLEMENTARY INFORMATION** section, EPA refers to this process as ''submerged standard industrial fermentation.''

The Food and Drug Administration (FDA) has determined that several enzymes produced by *T. reesei* QM6a are Generally Recognized As Safe (GRAS). This determination supports the Agency's preliminary conclusion that commercial use of *T. reesei* QM6a as a recipient microorganism for commercial enzyme production will not present an unreasonable risk of injury to health or the environment. *T. reesei* QM6a enzymes used in foods that have been granted GRAS status include cellulase, hemicellulase, transglucosidase, pectin lyase, acid fungal protease, and a chymosin enzyme preparation. Data supporting the GRAS petitions included the results of pathogenicity tests for the *T. reesei* QM6a production organisms and toxicity tests for the enzyme products. The data showed that the production strains are not pathogenic and did not produce toxins during enzyme fermentation.

4. *Commercial uses indicating that the microorganism products might be subject to TSCA.* EPA has reviewed several MCANs involving intergeneric *T. reesei* QM6a production organisms. More detailed information on MCANs submitted to EPA can be viewed on EPA's TSCA Biotechnology Program Web page: *http://www.epa.gov/oppt/biotech/pubs/submain.htm.*

Intergeneric *T. reesei* QM6a strains could also be used to manufacture industrial chemicals other than enzymes such as surfactants or specialty chemicals.

5. *Studies which indicate the potential for the microorganism to cause adverse effects to health or the environment*—a. *Human health hazards*—i. *Pathogenicity. Trichoderma reesei* QM6a is not pathogenic to humans. Due to its long history of use for production of enzymes used in food

applications, the potential for the fungus and its products to be pathogenic or toxic to humans has been evaluated numerous times. Various studies have been conducted assessing *T. reesei* QM6a's pathogenic potential in healthy and immunocompromised laboratory animals. Most studies have shown a lack of pathogenicity of *T. reesei* QM6a. Pathogenicity studies have been conducted as part of submissions submitted to FDA for GRAS petitions for several different enzymes used in the food industry. Studies using intraperitoneal (ip) injection of *T. reesei* QM6a in rats, using intravenous (IV) injection of *T. reesei* QM6a in both healthy and immunosuppressed rats, and using ip injection of viable and heat-killed cells of *T. reesei* QM6a in rats have all demonstrated a lack of potential pathogenicity to humans.

T. reesei QM6A is not known to possess any virulence factors associated with colonization or disease such as adherence factors, penetration factors, necrotic factors, toxins, or the ability to grow at human body temperature, 37 °C. There are no reports in the literature on infection in healthy humans by *T. reesei* QM6A. There are no reports of harmful effects associated with the use of or exposure to *T. reesei* QM6A strains given decades of commercial use for enzyme production. The body of evidence indicates that *T. reesei* QM6A does not pose concerns regarding human pathogenicity.

ii. *Toxicity.* Available data indicate that *T. reesei* QM6a strains used in submerged standard industrial fermentation operations in which no solid plant material or insoluble substrate is present in the fermentation broth do not present human toxicity concerns. A number of studies have been conducted assessing the potential for *T. reesei* QM6a to produce toxins during submerged fermentation for production of enzymes for food, pharmaceutical, or industrial uses. A cellulase enzyme known as celluclast produced by *T. reesei* QM6a has been tested for general oral toxicity and inhalation toxicity. Acute oral toxicity studies conducted in mice, rats, and dogs showed that *T. reesei* QM6a cellulase was not toxic to any of the test animals. Subchronic toxicity studies showed no evidence of systemic effects in dogs or rats. Additional toxicity studies have been conducted on other enzymes produced by *T. reesei* QM6a, the results of which have been presented in various GRAS petitions. Acute oral toxicity tests on two endoglucanases and a glucoamylase showed a lack of toxins. Subchronic feeding studies conducted on a cellulase, two xylanases, two endoglucanases, a protease, and a glucoamylase also showed a lack of toxicity in rats.

Industrial strains of *T. reesei* QM6a are routinely checked by the enzyme producers to confirm the absence of antibiotic activity and toxins including aflatoxin B, ochratoxin A, sterigmatocystin, T–2 toxin, and zearalenone according to the recommendations of the Joint Food and Agriculture Organization and the World Health Organization (FAO/WHO) Expert Committee on Food Additives. Relying on the data that show *T. reesei* QM6a has a long history of safe use in the production of food enzymes where there is a need to routinely check for the absence of toxins, EPA has preliminarily concluded that strains used industrially would not be expected to produce these compounds under the growth conditions used for enzyme fermentation.

iii. *Mycotoxins and other secondary metabolites.* The only health concern associated with *T. reesei* QM6a is its ability to produce a secondary metabolite called paracelsin, which is a peptaibol. Peptaibols are small linear peptides of 1,000–2,000 daltons characterized by a high content of the non-proteinogenic amino acid α-amino-isobutyric acid (Aib), with an *N*-terminus that is typically acetylated, and a *C*-terminus that is linked to an amino alcohol, which is usually phenylalaninol, or sometimes valinol, leucinol, isoleucinol, or tryptophanol. Peptaibols are associated with a wide variety of biological activities and have antifungal, antibacterial, sometimes antiviral, antiparasitic, and neurotoxic activity. Paracelsin has been shown to have toxicity toward mammalian cells such as hemolytic activity on human erythrocytes and cytotoxicity to rat adrenal medulla PC12 cells. Paracelsin showed toxicity to PC12 cells (a cell line derived from a pheochromocytoma of the rat adrenal medulla) with a CC_{50} (cytotoxicity concentration of 50%) of 21.8 micromolar (μM) (Ref. 6). The *in vitro* hemolytic activity of paracelsin has been reported to be $C_{50} = 3.7 \times 10^{-5}$ mole/liter (mol/L) (Ref. 6).

Paracelsin has not been detected in the use of *T. reesei* QM6a under submerged standard industrial fermentation operations in which no solid plant material or insoluble substrate is present in the fermentation broth; numerous toxicity studies on enzyme products of *T. reesei* QM6a have demonstrated a lack of toxicity to laboratory animals. EPA therefore generally expects that paracelsin production will be of insignificant concern with submerged standard industrial fermentation operations in which no solid plant material or insoluble substrate is present in the fermentation broth.

However, under non-standard conditions of fermentation, such as with extended duration of fermentation, or fermentation in the presence of insoluble carbon sources such as cellulose or in the presence of solid plant material, paracelsin may be produced (Ref. 6). Neither the information submitted with the petition, nor the information that is otherwise available is sufficient to allow EPA to determine the extent of paracelsin formation under these non-standard conditions. Consequently, EPA is unable to determine whether the use of the microbe under these non-standard conditions will pose an unreasonable risk to human health and/or the environment (Ref. 6).

b. *Environmental hazards*—i. *Hazards to animals. T. reesei* QM6a is not pathogenic to domesticated animals or wildlife. However, the secondary metabolite paracelsin produced by *T. reesei* QM6a has been shown to exhibit toxicity to aquatic species. Twenty-four hour exposure of paracelsin to *Artemia salina* (brine shrimp) suggested a lethal concentration of 50% (LC_{50}) of 21.26 μM (40.84 micrograms per milliliter (μg/ml)) which decreased to 9.66 μM (18.56 μg/ml) with a 36-hour (hr) exposure. With *Daphnia magna,* paracelsin was found to be moderately toxic, with an LC_{50} of 7.70 μM (14.79 μg/ml) with a 24-hr exposure, and 5.60 μM (10.76 μg/ml) with a 36-hr exposure.

ii. *Hazards to plants. Trichoderma reesei* QM6a is not a pathogen of plants. Although it is capable of degrading cellulose and hemicellulose due to the copious quantities of the enzymes it can produce, it cannot be a primary colonizer on plant tissue as genetic studies have shown that it does not contain any genes for ligninases that are required for initial breakdown of plant material. This species is known as a wood rot fungus, but it apparently attacks only decaying plant material, not live plants.

iii. *Effects on other organisms.* Peptaibols are toxic to Gram-positive bacteria and various fungi. The inhibitory action of peptaibols on various fungi is the reason that many species of *Trichoderma* are used as biocontrol agents of plant pathogenic fungi. *T. reesei* QM6a, which is known to produce only the peptaibol paracelsin, has been shown to be inhibitory to one particular fungus, *Phoma destructiva.*

Some species of *Trichoderma,* specifically *T. aggressivum, T. pleuotrophilum,* and *T. fulvidum* are pathogens of mushrooms. However, *T. reesei* QM6a is not a pathogen of mushrooms.

6. *Studies which indicate the survival characteristics of the microorganism in the environment.* The species *T. reesei* is known only from the single original isolate QM6a from the Solomon Islands. Therefore, there is little information on its prevalence or behavior in the environment. Microcosm studies have been conducted that suggest it would survive in the environment if inadvertently released in the plant rhizosphere and in bulk soils.

Although *T. reesei* was originally isolated from a tropical climatic region, it would be expected to persist in soils for extended periods of time, even after cold temperatures.

B. Evaluation of Available Information Relevant to the Criteria at § 725.67 for B. amyloliquefaciens as a Recipient Microorganism

1. *Identification and classification of the microorganism using available genotypic and phenotypic information. Bacillus amyloliquefaciens* was initially proposed as a unique species in 1943. The name *Bacillus amyloliquefaciens* lost standing when it was not included on the Approved List of Bacterial Names with Standing in Nomenclature in 1980. Since classical phenotypic tests could not differentiate it as a species unique from *Bacillus subtilis,* it was regarded as a subspecies of *B. subtilis* for several decades. However, molecular evidence from various subsequent studies led to the conclusion that *Bacillus amyloliquefaciens* did indeed deserve independent status. The DNA homology between *B. subtilis* and *B. amyloliquefaciens* is only about 15%. In addition, there were several phenotypic properties that differed between the two species. Chemotaxonomic studies revealed additional capability of separating strains of *B. amyloliquefaciens* from the other related species, *B. subtilis, B. licheniformis,* and *B. pumilus.* The species has remained within the genus *Bacillus sensu stricto* since it was last established as a separate species.

Recently, it has been proposed that there are two subspecies within the species *B. amyloliquefaciens, B. amyloliquefaciens* subsp. *amyloliquefaciens* and *B.* a*myloliquefaciens* subsp. *plantarum.* The former subspecies includes the type strain and likely most, if not all, of the industrial strains of *B. amyloliquefaciens* used for enzyme production. The latter subspecies consists of plant-associated strains used as biocontrol agents since they produce a number of antifungal lipopeptide and antibacterial polyketide toxins. This proposed exemption would be restricted to the subspecies *B. amyloliquefaciens* subsp. *amyloliquefaciens* which contains the industrial strains used for enzyme production. Adequate genotypic and phenotypic information is available to accurately identify *B. amyloliquefaciens* subsp. *amyloliquefaciens.*

2. *Information to evaluate the relationship of the microorganism to any other closely related microorganisms which have a potential for adverse effects on health or the environment.* There are several species in the genus *Bacillus* that are known pathogens. These include *B. anthracis,* which is pathogenic to humans and other animals, and *B. cereus,* which is a common cause of food poisoning. *B. thuringiensis, B. larvae, B. lentimorbus, B. popilliae,* and some strains of *B. sphaericus* are pathogenic or toxigenic to certain insects. The new subspecies *B. amyloliquefaciens subsp. plantarum* has been shown to exhibit toxicity mainly to plant pathogenic fungi, but can also be cytotoxic to mammalian cells. It is possible, using polyphasic approaches, to differentiate between *Bacillus amyloliquefaciens subsp. amyloliquefaciens* and these other species and subspecies that have the potential to adversely affect humans or other organisms. *B. amyloliquefaciens* can be distinguished from the very similar *B. subtilis* by a few phenotypic traits and DNA dissimilarity.

3. *A history of safe commercial use for the microorganism. Bacillus amyloliquefaciens* has been used to produce commercial enzymes for more than 50 years. It produces carbohydrases, proteases, nucleases, xylanases, and phosphatases that have applications in the food, brewing, distilling, and textile industries.

For commercial enzyme production, *B. amyloliquefaciens* is grown in a closed, submerged fermentation system. In submerged fermentation, growth of the microorganism occurs beneath the surface of the liquid growth medium. The fermentation broth is a defined liquid growth medium (with no solid plant material or insoluble substrate) of carbon and nitrogen sources, minerals, salts, and other nutrients that is maintained at optimal pH and temperature. These conditions support the active growth and productivity of the organisms. Submerged fermentation systems reduce the potential for exposure of workers to the production organism and fermentation broth aerosols, reduce the potential for contamination of the culture, and make the collection of extracellular enzyme simpler and less costly. The fermentation process is terminated before the *B. amyloliquefaciens* organisms go into the stationary growth phase (i.e., before secondary metabolism begins). At the end of the fermentation process, the production organisms are separated from the fermentation broth and inactivated. The enzyme preparation may also be subjected to other purification processes.

B. amyloliquefaciens has a long history of safe use for the production of enzymes with both food and industrial uses with no incidences associated with human pathogenicity. In response to a petition from the ETA, FDA affirmed that carbohydrase enzyme preparations and protease enzyme preparations derived from either *B. subtilis* or *B. amyloliquefaciens* are GRAS for use as direct food ingredients. The European Food Safety Authority (EFSA) has put *B. amyloliquefaciens* on their list of bacteria that have a ''qualified presumption of safety'' (QPS) because of a long history of apparent safe use in food and feed production. However, it was put on the list with a qualifier that only strains of *B. amyloliquefaciens* that do not have toxigenic potential be used.

One strain of *B. amyloliquefaciens* also has been used as a biopesticide. A naturally occurring strain of *B. amyloliquefaciens subsp. plantarum* was registered in 2000 as a biopesticide active ingredient under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA). It can only be used on certain ornamental, non-food plants in greenhouses and other closed structures.

4. *Commercial uses indicating that the microorganism products might be subject to TSCA.* It is expected that intergeneric strains of *B. amyloliquefaciens* will be used to produce enzymes and to manufacture other industrial chemicals subject to TSCA. Many enzymes produced by *B. amyloliquefaciens,* particularly α-amylase, are used in laundry detergents and in textile processing. *B. amyloliquefaciens* also makes a surfactant known as surfactin which functions as an antibiotic.

5. *Studies which indicate the potential for the microorganism to cause adverse effects to health or the environment*—a. *Human health hazards*—i. *Pathogenicity.*

Bacillus amyloliquefaciens is not pathogenic to humans. There are no reports in the literature associating *B. amyloliquefaciens* with infection or disease in humans. *B. amyloliquefaciens*

has been categorized as a Biosafety 1 microorganism by the Centers for Disease Control and Prevention (CDC). Biosafety 1 microorganisms are well-characterized agents not known to consistently cause disease in immunocompetent adult humans, and which present minimal potential hazard to laboratory personnel and the environment. Animal toxicity studies were performed with *B. amyloliquefaciens* strain FZB24 to support its registration as a biopesticide. Tests for acute oral toxicity/pathogenicity, acute pulmonary toxicity/pathogenicity, and acute injection toxicity/pathogenicity showed little to no adverse effects, which indicated low mammalian toxicity and a lack of pathogenicity/infectivity.

ii. *Toxins and other secondary metabolites.* Although another species in the genus *Bacillus, B.cereus,* has the potential to produce food poisoning toxins which cause both emetic and diarrheal syndromes, and a variety of local and systemic infections, the risk of food-borne disease caused by bacilli other than *B. cereus* is generally considered to be negligible because usually only *B. cereus* has the genes that encode food poisoning toxins. Industrial strains of *Bacillus* species belonging to the *B. subtilis* group, which includes *B. amyloliquefaciens,* do not express *B. cereus* toxins. In addition, there are no reported cases of food poisoning being caused by *B. amyloliquefaciens.*

Some strains of *B. amyloliquefaciens* have been shown to produce bioactive cyclic lipopeptide metabolites such as iturin, surfactin, fengycin, and bacillomycin D. These are cyclical lipoprotein biosurfactants produced by non-ribosomal peptide synthesis. They have a low mammalian toxicity as demonstrated by a lethal dose of 50% (LD_{50}) of >2,500 milligram/kilogram (mg/kg) in an acute toxicity test of surfactin C, and a No Observed Adverse Effect Level (NOAEL) of 500 mg/kg-day in a repeat dose oral gavage study. Some strains of *B. amyloliquefaciens* may also produce the polyketide toxins macrolactin, bacillanene, and difficidin. *B. amyloliquefaciens* also produces the protein toxin barnase and the antifungal protein baciamin.

There are several reports of the isolation of *B. amyloliquefaciens* from water-damaged buildings in which occupants were suffering ill health symptoms. Extracts from biomass of isolated strains of *Bacillus* exhibiting antifungal properties were assessed for the toxicity endpoints. All of the isolated *B. cereus* and *B. amyloliquefaciens* strains studied showed cytotoxicity as evidenced by inhibition of boar spermatozoa motility; however, the *B. amyloliquefaciens* strains affected boar spermatozoa differently from the indoor *B. cereus* isolates and the reference food-poisoning strain.

The isolation of cytotoxic strains of *B. amyloliquefaciens* from water-damaged buildings is of little concern in relation to this exemption of *B. amyloliquefaciens* subsp. *amyloliquefaciens.* It is important to note that all of the *B. amyloliquefaciens* strains studied in water-damaged buildings were specifically selected for further study because the isolates exhibited antifungal activity. Some of the secondary metabolites produced by these biocontrol-type strains of *B. amyloliquefaciens* apparently also exhibit cytotoxicity to mammalian cells (i.e., boar spermatozoa). However, industrial strains of *B. amyloliquefaciens* that would fall into the classification as *B. amyloliquefaciens* subsp. *amyloliquefaciens* have been shown not to produce most, if not all, of the antifungal and antibacterial lipopeptides and polyketides produced by the biocontrol-type strains. The genome of the type strain of *B. amyloliquefaciens* DSM 7^T (now *B. amyloliquefaciens* subsp. *amyloliquefaciens*) is very similar to the genome of the biocontrol strain FZB42 (*B. amyloliquefaciens* subsp. *plantarum*). However, the latter subspecies had genomic islands carrying prophage sequences, transposases, integrases, and recombinases that the DSM 7^T type strain did not have. The DSM 7^T type strain was shown to have a diminished capacity to non-ribosomally synthesize secondary metabolites with antifungal and antibacterial activities. The DSM 7^T type strain could not produce the polyketides difficidin or macrolantin, and could not produce lipopeptide such as iturin, macrolantin, and other compounds except for the compound surfactin.

The only other reported instance of mammalian toxin production by *B. amyloliquefaciens* was during the 1980s with the commercial production of tryptophan, by a genetically engineered strain of *B. amyloliquefaciens,* strain IAM 1521. The consumption of the tryptophan food supplement from various retail lots produced by one specific company resulted in an epidemic of a disease known as eosinophilia-myalgia syndrome (EMS) in which 1,511 were sickened, and 37 people died. Although this disease incidence was widely studied, the cause of the disease was never confirmed. It was thought to be due to the consumption of a chemical constituent that was associated with specific tryptophan manufacturing processes. This included the combination of using reduced quantities of powdered carbon for a purification step with the use of a ''new'' strain of *B. amyloliquefaciens* called Strain V. There purportedly was a chemical substance produced as a result of the genetic engineering of this certain strain, but the toxin was not attributable to the parental strain of *B. amyloliquefaciens* as not all production batches were toxic.

Although there are isolated reports of toxin production in several antifungal, environmental isolates of *B. amyloliquefaciens,* the larger body of studies available on the safety and toxicity of *B. amyloliquefaciens* strains used industrially for enzyme production (Ref. 6) indicate that these strains are safe and non-toxic. For example, the toxicity of industrial strains of *B. amyloliquefaciens, B. subtilis,* and *B. licheniformis* used for large-scale enzyme production has been studied. The industrial strains did not exhibit any cytotoxicity in Chinese hamster ovary tests. In Europe, the toxicity of two strains of *B. amyloliquefaciens* used for the production of α-amylase and bacillolysin for the product Kemzyme W Dry was assessed by the EFSA's Scientific Panel on Additives and Products or Substances used in Animal Feed. The panel concluded that the *B. amyloliquefaciens* production strains DSM9553 and DSM9554 when used as a source of extracellular enzyme do not present a toxigenic risk. Given its widespread distribution in the environment, its long history of safe use in industrial fermentation, the absence of reports on pathogenicity to humans, and the limited reports of cytotoxicity, all indicate that the use of *B. amyloliquefaciens* in fermentation facilities for production of enzymes or specialty chemicals does not present a human health concern.

b. *Environmental hazards*—i. *Hazards to animals.* There are no reports suggesting that *B. amyloliquefaciens* is pathogenic to domesticated animals or wildlife. The cytotoxicity of antifungal secondary metabolites to mammalian cells by biocontrol stains of *B. amyloliquefaciens* is discussed in this unit.

ii. *Hazards to plants. B. amyloliquefaciens* is not pathogenic to plants. There are plant-associated strains of *B. amyloliquefaciens* that are beneficial to plants because they inhibit the growth of fungal plant pathogens. Various antifungal and antibacterial secondary metabolites produced by

strains of *B. amyloliquefaciens* such as various iturins, surfactins, fengycin, bacillomycins, and azalomycin have been shown to inhibit the growth of *Rhizoctonia solani, Xanthomonas campestris* pv. *campestris, Alternaria brassicae, Botyris cinerea, Leptosphaeria maculans, Verticillium longisporum, Pythium ultimatum, Aspergillus* spp., *Fusarium* spp., *Bipolaris sorokiniana,* and *Fusarium oxysporum.*

In addition to the ability of *B. amyloliquefaciens* to produce antifungal and antibacterial compounds, the bacterium is known as a plant growth-promoting rhizobacterium. Some of the biological control strains of *B. amyloliquefaciens* produce the phytohormone indole-3-acetic acid (IAA).

6. *Studies which indicate the survival characteristics of the microorganism in the environment.* Using polymerase chain reaction (PCR) techniques, it has been found that populations of viable *B. amyloliquefaciens* inoculated at high densities to intact soil-core microcosms decreased to below the detection limit within 1 month. Survival was longer for a genetically modified *B. amyloliquefaciens* strain on leaf surfaces; vegetative cells were still detected for over 2 months in the phylloplane. Viable cells were not detectable in plant roots after 1 month or in soils after a few days. Given that the natural habitat for *B. amyloliquefaciens* is typically in soil, on plant roots, or as an endophyte within the roots or stems of plants, the bacterium is likely to survive for a least some period of time if inadvertently released to the environment. However, like other bacilli, survival in soil may occur predominately as the resistant endospore state, whereas in the rhizosphere, it may exist as active vegetative cells.

IV. Physical Containment and Control Technologies

A. Release and Exposure Assessment in Support of Proposed TSCA Section 5(h)(4) Exemption for T. reesei QM6a

The estimated releases of the microorganism from an enzyme manufacturing facility and exposures of the microorganisms to workers, the general population, and the environments are based on a generic scenario developed by EPA for large-scale closed system fermentation. Assumptions in the generic scenario are that the facility operates 350 days/year, produces 100 batches/year, and the maximal cell concentration in the fermentation broth is 1×10^7 colony-forming units (cfu)/ml, and the volume of the fermentation broth is 70,000 L. The process consists of the main steps of laboratory propagation, fermentation and then recovery where filtration operations separate out the biomass from the concentrated desired product. The operations, sources of exposure and release are described in more detail in EPA's Release and Exposure Assessments (Ref. 8).

B. Release and Exposure Assessment in Support of Proposed TSCA 5(h)(4) Exemption for B. amyloliquefaciens

The estimated releases of the microorganism from an enzyme manufacturing facility and exposures of the microorganisms to workers, the general population, and the environments are based on a generic scenario developed by EPA for large-scale closed system fermentation. Assumptions in the generic scenario are that the facility operates 350 days/year, produces 100 batches/year, and the maximal cell concentration in the fermentation broth is 1×10^{11} cfu/ml and the volume of the fermentation broth is 70,000 L. The process consists of the main steps of laboratory propagation, fermentation and then recovery where filtration operations separate out the biomass from the concentrated desired product. The operations, sources of exposure and release are described in more detail in EPA's Release and Exposure Assessments (Ref. 9).

Additionally, containment and control technologies are delineated in the § 725.422 for Tier I and Tier II exemptions.

V. Risk Assessment

A. Risk Assessment for T. reesei QM6a

There is only one potential concern for human health and environmental hazards associated with *T. reesei* QM6a, and that is for paracelsin production. Paracelsin production is not expected to occur in submerged standard industrial fermentation operations in which no solid plant material or insoluble substrate is present in the fermentation broth. There is no concern for potential pathogenicity of *T. reesei* QM6a to humans, plants, domesticated animals, or wildlife. Pathogenicity test data on various industrial strains typically do not show adverse effects. Toxicity testing on a number of enzymes produced by *T. reesei* indicates that the fungus does not produce toxins under the standard conditions used for enzyme production.

T. reesei has a long history of safe use and would be expected to present low hazard to workers, the general public, and the environment. Although direct monitoring data are unavailable, worst-case estimates of potential exposures made by EPA in its assessment of potential risks (Ref. 6) do not indicate high levels of exposure of *T. reesei* to either workers or the public resulting from the submerged industrial enzyme fermentation operations that are standard throughout the industry. Standard industrial hygiene management practices currently used in the fermentation industry reduce the potential for adverse health effects in the workplace. The standard use of engineering controls (closed fermentation systems), appropriate work practices, personal protective equipment, and personal hygiene reduce the potential for worker exposure. Thus, current practices reduce the potential for the dermal and respiratory exposures estimated by EPA.

EPA has made a preliminary determination based on worst-case exposure scenarios and toxicity of the microorganism that the potential risk to workers, the general public, and to the environment resulting from the use of *T. reesei* QM6a in submerged standard industrial fermentation as a recipient microorganism is low, provided the additional criteria of the tiered exemptions for the introduced genetic material and the physical containment conditions are met (Ref. 6).

B. Risk Assessment for B. amyloliquefaciens

Industrial strains of *Bacillus amyloliquefaciens* that would fall into the subspecies *Bacillus amyloliquefaciens* subsp. *amyloliquefaciens* are not pathogenic to humans, plants, domesticated animals, or wildlife, and do not produce many of the toxic secondary metabolites found in biological control strains of *B. amyloliquefaciens* subsp. *plantarum.* The long history of safe use of enzymes produced by industrial strains of *B. amyloliquefaciens* in food is evidence that the bacterium does not produce toxins under standard conditions used for enzyme production.

Current practices in the fermentation industry reduce the potential for adverse health effects in the workplace. The use of engineering controls (closed fermentation systems), appropriate work practices, personal protective equipment, and personal hygiene reduce the potential for worker exposure. Thus, current practices reduce the potential for dermal and respiratory exposures.

Industrial strains of *B. amyloliquefaciens* have a long history of

safe use and would be expected to present low hazard to workers, the general public, and the environment. Although direct monitoring data are unavailable, worst-case estimates do not suggest high levels of exposure of *B. amyloliquefaciens* to either workers or the public resulting from the submerged industrial enzyme fermentation operations that are standard throughout the industry.

EPA has made a preliminary determination based on worst-case exposure scenarios and toxicity of the microorganism, that the potential risk to workers, the general public, and the environment, associated with the use of industrial strains of *B. amyloliquefaciens* subsp. *amyloliquefaciens* in submerged standard industrial fermentation as a recipient microorganism is low provided the additional criteria of the tiered exemptions for the introduced genetic material and the physical containment conditions are met (Ref. 7).

VI. Economic Impacts

EPA's economic assessment (Ref. 10) evaluates the potential for significant economic impacts as a result of the addition of two microorganisms (*Trichoderma reesei* (Strain QM6a) and *Bacillus amyloliquefaciens* subsp. *amyloliquefaciens*) to § 725.420 which lists recipient microorganisms eligible for Tier I and Tier II exemptions. Over the course of the first 10 years after the effective date of the final rule, if finalized as proposed, EPA estimates that the proposed addition of the two microorganisms to the list in § 725.420 would generate a total cost savings to society of $5.68 million. Industry would save approximately $1.98 million and the Agency would save approximately $3.68 million. The equivalent, annualized cost savings are expected to be $552,000 and $535,000 at a 3% and 7% discount rate, respectively. EPA estimates that there will be a net decrease in burden to society of 72,500 hr over this 10-year period.

VII. Rationale for Proposed Regulatory Action

A. Statutory Background

Pursuant to TSCA section 5(h)(4), EPA is authorized to exempt the manufacturer of any new chemical substance from all or part of the requirements of TSCA section 5 if EPA determines that the manufacture, processing, distribution in commerce, use, or disposal of the chemical substance, or any combination of such activities, will not present an unreasonable risk of injury to human health or the environment. Section 26(c) of TSCA provides that any action authorized under TSCA for an individual chemical substance may be taken for a category of such chemical substances.

While TSCA does not contain a definition of ''unreasonable risk,'' the legislative history indicates that the determination of unreasonable risk requires a balancing of the considerations of both the severity and the probability that harm will occur against the effect of the final regulatory action on the availability to society of the benefits of the chemical substance (Ref. 11). This analysis can include an estimate of factors such as market potential, the effect of the regulation on promoting or hindering the economic appeal of a chemical substance, environmental effects, and many other factors which are difficult to define and quantify precisely. EPA may rely not only on data available to it, but also on its professional judgment. Congress recognized that the implementation of the unreasonable risk standard ''will vary on the specific regulatory authority which the Administrator seeks to exercise'' [Ibid.].

B. EPA's Approach

In determining whether *T. reesei* QM6a and *Bacillus amyloliquefaciens* subsp. *amyloliquefaciens* will not present an unreasonable risk of injury to human health or the environment, the Agency considers more than just the inherent risks presented by the two microorganisms. The Agency also considers the full range of societal benefits associated with the exemption; for example, as discussed in more detail in Unit V., EPA considers not only the cost savings to the users of the microorganism, but also the societal benefits that flow from promotion of the use of low-risk recipient microorganisms, while allowing the Agency to direct its resources toward higher risk microorganisms.

EPA is only proposing to revise one aspect of the existing tiered exemptions at § 725.420; specifically, EPA is proposing to expand the exemption to apply to two specific microorganisms. EPA is not reconsidering or otherwise reopening any other aspect of those exemptions. The narrow scope of this action necessarily affects the scope of EPA's cost-benefit analysis. This means, for example, that EPA compares the risks and benefits of the two microorganisms being considered for an exemption with the risks that would have resulted if those same two microorganisms remained subject to full MCAN submission requirements and 90-day EPA review. But EPA does not compare the risks and benefits that would result from use of these two microorganisms in the absence of any regulation.

It is also significant that the standard applicable to this proposed rule is that the microorganisms will present ''no unreasonable risk,'' rather than ''no risk.'' It is not possible to eliminate all risks associated with the manufacture, processing, distribution in commerce, use, and disposal of any new microorganism nor was this Congress' intent. The standard embodied by a TSCA section 5(h)(4) exemption does not require the Agency to ensure absolute safety from the activities associated with an exempted chemical substance.

C. Application of No Unreasonable Risk Factors

The following is an explanation of the factors and their analyses relevant to the no unreasonable risk finding.

1. *Risks associated with microorganisms.* EPA's evaluation of the available information concerning *T. reesei* QM6a and *B. amyloliquefaciens* subsp. *amyloliquefaciens* against these criteria is presented in detail in Unit III., and is summarized again here for the readers' convenience.

The Agency developed specific criteria in § 725.67 that the Agency uses in determining the extent of a potential recipient microorganism's risks, and consequently, its eligibility for listing at § 725.420. These criteria were explained in detail in the proposed ''biotech'' rule (Ref. 12) and final ''biotech'' rule (Ref. 13), and are discussed again in Units II. and III. EPA's conclusions regarding the low-risk potential for these two microorganisms are based on the available data and EPA's scientific professional judgment based on 14 years experience reviewing notifications for new intergeneric microorganisms submitted in accordance with the regulations at 40 CFR part 725.

T. reesei QM6a is not pathogenic to humans, plants, domesticated animals, or wildlife and the fungus does not produce toxins under standard industrial conditions used for enzyme production. *T. reesei* QM6a has a long history of safe use and is generally expected to present low risk to workers, the general public, and the environment resulting from submerged standard industrial enzyme fermentation operations that are standard throughout the industry. Under non-standard conditions of fermentation, such as with extended duration of fermentation, or fermentation in the presence of insoluble carbon sources such as

cellulose or other solid surfaces, paracelsin may be produced. The risks associated with the production of paracelsin may be significant due to the toxicity of paracelsin to mammalian cells, aquatic species, Gram-positive bacteria, and various fungi. However, the potential risk associated with any paracelsin production would be significantly reduced by this proposed rule, which proposes to limit the exemption to fermentation operations using submerged standard industrial fermentation operations, and in which no solid plant material or insoluble substrate is present in the fermentation broth.

Industrial strains of *Bacillus amyloliquefaciens* that would fall into the subspecies *Bacillus amyloliquefaciens* subsp. *amyloliquefaciens* are not pathogenic to humans, plants, domesticated animals, or wildlife, and do not produce toxins under standard conditions used for enzyme production. Industrial strains of *B. amyloliquefaciens* subsp. *amyloliquefaciens* used in fermentation facilities for the production of enzymes have a long history of safe use and are expected to present low hazards to human health and the environment resulting from standard industrial submerged fermentation operations. Consistent with the proposed restrictions on *Trichoderma reesei* discussed in Unit II.A., only strains of *Bacillus amyloliquefaciens* that would fall into the subspecies *Bacillus amyloliquefaciens* subsp. *amyloliquefaciens* were considered as the eligible recipient microorganism at § 725.420. EPA is proposing to exclude other strains/subspecies of these two species for which:

- The Agency still has insufficient data and review experience to find that they will not present an unreasonable risk of injury or
- The Agency has found that, under certain conditions, based on data on the species in question, a strain or subspecies may present an unreasonable risk, thereby requiring a closer examination of the conditions of manufacturing, processing, distribution in commerce, use, and disposal during a full 90-day Premanufacture Notice (PMN) review. Consequently, additional information would be necessary to make an appropriate determination about the organisms' potential risks and benefits.

The Agency believes that the requirement for submission of a MCAN followed by a 90-day review period for new intergeneric microorganisms that use *T. reesei* QM6a and *Bacillus amyloliquefaciens* subsp. *amyloliquefaciens* as recipient microorganisms is not necessary to address the risks associated with these microorganisms, and would not result in any additional protection than would be achieved by this proposed rule. In part, this conclusion is based on EPA's preliminary findings regarding the intrinsically low level of hazard that these two organisms pose to human health and the environment. In addition, the existing requirements of the Tier I and Tier II exemptions, taken with the proposed restrictions, would place sufficient constraints to significantly limit the potential risks of injury to human health or the environment that these two microorganisms may present.

In sum, the Agency believes that the criteria set forth in this proposed exemption would be sufficient to mitigate the identified risks associated with these microorganisms.

2. *Costs.* This proposed rule expands an existing exemption, and as discussed in Unit VI., would significantly reduce costs to currently regulated entities. The proposed rule would not otherwise impose any additional cost or other burden on currently regulated entities, or existing fermentation processes.

EPA further believes that limiting the use of this proposed exemption to the identified fermentation conditions would impose no burden on affected entities. The restriction merely codifies existing industrial fermentation procedures that are common practices for manufacturing operations that currently seek to use tiered exemptions. Consequently, EPA expects that most, if not all, manufacturers currently using these microbes will already have the measures in place to qualify for the exemption. Equally important, this limitation would add no burden to any existing fermentation processes. Currently, fermentation operations with either of these microbes are not eligible for the tiered exemption, and thus a MCAN must be submitted. Any company that chooses to use a different fermentation process could continue to operate under the status quo and simply submit a MCAN. This proposed rule would simply offer an additional, less costly option, to facilities that choose to use the fermentation operations discussed in this proposed rule.

3. *Benefits.* The following discussion describes the benefits of this proposed rule in a qualitative manner; for a more quantitative approach, see the economic analysis prepared for this proposed rule (Ref. 10). A summary of that economic analysis is also provided in Unit VI.

The benefits analyzed encompass more than the direct benefits associated with submitting a Tier I or Tier II exemption for a new intergeneric microorganism rather than a MCAN. Rather, EPA's benefit analysis included a consideration of the broader benefits to society. EPA's unreasonable risk determination is based on broader benefits to society as well as those benefits attributable to a reduction in the burden associated with submission of Tier I and Tier II exemptions rather than MCANs.

EPA believes manufacturers of new intergeneric microorganisms based on these low-risk microorganisms currently bear an unnecessary regulatory burden in continuing to file MCANs. By adding *T. reesei* QM6a and *B. amyloliquefaciens* to the list of eligible recipient microorganisms in § 725.420, the Agency removes unnecessary regulatory impediments to the design, manufacture, and commercialization of these low risk new intergeneric microorganisms, and of the chemical substances that can be produced by these safer microorganisms. This action would also substantially reduce the costs associated with industry's reporting burden, including the costs associated with the preparation of the submission, and with the delay in the commercial market introduction of the new intergeneric microorganism. Some of the cost-savings benefits may accrue to small businesses, either as developers of the exempt microorganisms, as producers of fermentation chemicals using the live microorganisms, or as customers for enzymes or other products made using the microorganisms.

There would also be a reduction in the Agency review resources currently allocated to reviews of MCANs for these two microorganisms. These Agency resources would be shifted to the review of new intergeneric microorganisms or chemical substances of greater concern.

There would be cost savings to both the industry and the Agency. The proposed rule is expected to positively impact the rate of innovation in the industry. It is reasonable to assume that a new intergeneric microorganism will either possess a new function or serve an existing function more efficiently or less expensively. The reduction in delay for that new intergeneric microorganism to be introduced into commerce is a benefit to both manufacturers and the general public who will have access to the substance more quickly. The expected benefits to innovation have not been quantified but include: Reduced time to develop and commercialize organisms; decreased cost of some downstream industrial products, such as fuel ethanol; improved consumer appeal of some products, such as certain

textiles; and reduced costs of some consumer products, such as detergent and leather goods.

4. *Risk/benefit balance.* Determining the presence or absence of an unreasonable risk requires balancing of the benefits and risks posed by a regulatory action. EPA has determined that the risks are generally low based on the inherent properties and intended uses of *T. reesei* QM6a and *B. amyloliquefaciens,* and would be adequately managed by the restrictions in the proposed rule, combined with the existing requirements of the Tier I and Tier II exemptions.

As noted in this unit, EPA believes that this proposed rule would impose no costs. This proposed rule expands an existing exemption, and as such, would in fact reduce costs to currently regulated entities. This proposed rule would not otherwise impose any additional cost or other burden on currently regulated entities, or existing fermentation processes. The limitation on the use of the proposed exemption to certain fermentation conditions is not a cost that would be imposed by this proposed rule but rather a limitation on the amount of regulatory relief it would provide. The proposed conditions reflect industrial fermentation procedures that are currently common practices for the affected industry.

EPA also believes that the benefits of this proposed rule are quite significant. This proposed rule would reduce the overall regulatory burden for affected entities by reducing the reporting requirements and by eliminating the delay of these products into commerce. As a consequence, this would benefit both regulated entities and the general public by promoting the expedited manufacture and use of the chemical substances produced using these low-risk organisms and manufacturing processes. There is also the added benefit of concentrating limited EPA resources on regulation of chemical substances which have a greater potential to present significant risks, rather than on these two microorganisms. While this is difficult to quantify, it is considered substantial nonetheless.

In sum, the Agency believes that the criteria set forth in this proposed exemption are sufficient to mitigate the low level of potential risks presented by these organisms, particularly when compared to the benefits, *in toto,* of this proposed exemption, to levels that are consistent with the statutory standard for an exemption. Consequently, EPA has made a preliminary conclusion that adding *T. reesei* QM6a and *B. amyloliquefaciens* as recipient microorganisms to the list of recipient microorganisms at § 725.420 is appropriate, as it would not present an unreasonable risk of injury to human health or the environment when manufactured under the conditions of this proposed exemption.

VIII. Request for Public Comment, Rulemaking Process, and Request for an Informal Public Hearing

A. Rulemaking Process and Request for an Informal Public Hearing

EPA is conducting this rulemaking under the notice and comment rulemaking procedures of section 553 of the Administrative Procedure Act (APA), 5 U.S.C. 553. Interested persons have the opportunity to submit written comments by the methods identified under **ADDRESSES**. EPA will carefully consider all such comments.

EPA is also providing an opportunity for an informal public hearing on the proposed rule. This hearing will be held only if EPA receives a timely written request for such a hearing.

As a general matter, EPA is not required to hold a public hearing in informal notice and comment rulemaking conducted under APA section 553. However, use of TSCA section 5(h)(4) modifies the APA section 553 rulemaking requirements by referencing TSCA section 6(c)(2) and (c)(3) rulemaking procedures. Under the TSCA section 6 procedures, EPA must hold an informal public hearing, if requested, and, if properly requested and granted by EPA, allow an opportunity to present rebuttal submissions and conduct cross-examinations related to disputed issues of material fact.

EPA does not anticipate that, even if a hearing is held, there will be a need for rebuttal submissions and cross-examination, because the TSCA section 5(h)(4) portion of this proposed rulemaking is based primarily on matters of science policy that do not yield disputed factual issues.

B. Specific Comment Solicitation

EPA is seeking public comment pertaining to several specific issues regarding the proposed rule.

1. Do the proposed rule and supporting documents adequately address:

- The effects of the new microorganism on health and the environment?
- The magnitude of exposure of human beings and the environment to the new microorganism?
- The benefits of the new microorganism for various uses and the availability of substitutes for such uses?
- The reasonably ascertainable economic consequences of granting or denying the exemption, including effects on the national economy, small business, and technological innovation?

2. Does the proposed rule address taxonomy adequately (is the Agency capturing and excluding the correct strains)?

3. Does the proposed rule address the right description of typical conditions for enzyme production (eliminating plant material/solid surfaces)?

4. Are the limitations on the use of *T. reesei* QM6a reasonable for preventing paracelsin production (i.e., having no solid plant material or insoluble substrate with the microorganism)?

IX. References

As indicated under **ADDRESSES**, a docket has been established for this proposed rule under docket ID number EPA–HQ–OPPT–2011–0740. The following is a listing of the documents that have been placed in the docket for this proposed rule. The docket includes information considered by EPA in developing this proposed rule, including the documents listed in this unit, which are physically located in the docket. In addition, interested parties should consult documents that are referenced in the documents that EPA has placed in the docket, regardless of whether these referenced documents are physically located in the docket. For assistance in locating documents that are referenced in documents that EPA has placed in the docket, but that are not physically located in the docket, please consult the technical contact listed under **FOR FURTHER INFORMATION CONTACT**. The docket is available for review as specified under **ADDRESSES**.

1. Genencor International, Inc. Letter of Application to list *Trichoderma reesei* as exempt under subpart G of 40 CFR Part 725—Reporting Requirements and Review Processes for Microorganisms. March 17, 2005.

2. Novo Nordisk BioChem North America, Inc. Letter of Application to list *B.amyloliquefaciens* as exempt under subpart G of 40 CFR Part 725—Reporting Requirements and Review Processes for Microorganisms. November 7, 1997.

3. EPA, OPPT. Email confirming Novo Nordisk BioChem North America, Inc.'s letter of application to list *B.amyloliquefaciens* as exempt under subpart G of 40 CFR Part 725—Reporting Requirements and Review Processes for Microorganisms. August 3, 2009.

4. ETA. Supplemental information on *Trichoderma reesei.* January 29, 2010.

5. ETA. Supplemental information on *Trichoderma reesei.* June 16, 2011.

6. EPA, OPPT. Risk Assessment of *Trichoderma reesei* for Consideration of Addition to the List of Eligible Recipient

Microorganisms for the Tiered 5(h)(4) Exemptions from MCAN Reporting Requirements. October 2011.

7. EPA, OPPT. Risk Assessment of *Bacillus amyloliquefaciens* subsp. *amyloliquefaciens* for Consideration of Addition to the List of Eligible Recipient Microorganisms for the Tiered 5(h)(4) Exemptions from MCAN Reporting Requirements. October 2011.

8. EPA, OPPT. Release and Exposure Assessment in Support of Proposed TSCA 5(h)(4) Exemption for *Trichoderma reesei.* June 2011.

9. EPA, OPPT. Release and Exposure Assessment in Support of Proposed TSCA 5(h)(4) Exemption for *Bacillus amyloliquefaciens.* June 2011.

10. EPA, OPPT. Economic Analysis for the Proposed Biotechnology Exemptions Rule for *Trichoderma reesei* and *Bacillus amyloliquefaciens.* September 2011.

11. Legislative History of the Toxic Substances Control Act, pp. 409–423. House Report 1341, 94th Congress, 2nd Session. 1976.

12. EPA. Microbial Products of Biotechnology; Proposed Regulation under the Toxic Substances Control Act. **Federal Register** (59 FR 45526; September 1, 1994) (FRL–4774–4).

13. EPA. Microbial Products of Biotechnology; Final Regulation under the Toxic Substances Control Act. **Federal Register** (62 FR 17910; April 11, 1997) (FRL–5577–2).

X. Statutory and Executive Order Reviews

A. Executive Order 12866: Regulatory Planning and Review and Executive Order 13563:

Improving Regulation and Regulatory Review

This action is not a ''significant regulatory action'' under the terms of Executive Order 12866 (58 FR 51735, October 4, 1993) and is therefore not subject to review under Executive Orders 12866 and 13563 (76 FR 3821, January 21, 2011). EPA prepared an analysis of the potential costs and benefits associated with this action, which is summarized in Unit VI.

B. Paperwork Reduction Act (PRA)

According to PRA, 44 U.S.C. 3501 *et seq.,* an agency may not conduct or sponsor, and a person is not required to respond to, a collection of information that requires approval by the Office of Management and Budget (OMB) under PRA, unless it has been approved by OMB and displays a valid OMB control number. The OMB control numbers for EPA's regulations in title 40 of the CFR, after appearing in the **Federal Register**, are listed in 40 CFR part 9, and included on the related collection instrument, or form, if applicable.

The information collection requirements related to the submission of Tier I and Tier II notification are already approved by OMB under PRA, and have been assigned OMB control numbers 2070–0012 and 2070–0038. This proposed rule does not impose any new requirements, or otherwise increase burden such that additional OMB review or approval is necessary. Instead, this proposed rule is expected to reduce the amount of required reporting by allowing firms to submit less information for qualifying microorganisms.

The PRA requires agencies to estimate the potential recordkeeping and reporting burden of a proposed rule. In this context, the term ''burden'' is defined in 5 CFR 1320.3(b). EPA estimates that this proposed rule would result in a reduction of industry burden by 30,695 hr over 10 years. EPA also estimates that the proposed rule would cause a total incremental Agency savings of 41,869 hr over 10 years. Submit any comments related to these estimates to EPA. See **ADDRESSES** for submission of comments.

C. Regulatory Flexibility Act (RFA)

Pursuant to section 605(b) of the RFA, 5 U.S.C. 601 *et seq.,* the Agency hereby certifies that this proposed rule, if promulgated as proposed, would not have a significant economic impact on a substantial number of small entities. Under RFA, small entities include small businesses, small organizations, and small governmental jurisdictions. For purposes of assessing the impacts of this action on small entities, small entity is defined as:

1. A small business as defined by the Small Business Administration's (SBA) regulations at 13 CFR 121.201 using either the number of employees or annual receipts for the businesses affected by the regulation, which for this action includes any business that is conducting commercial research and development activities or persons manufacturing, importing or processing products using intergeneric microorganisms for biofertilizers; biosensors; enzyme, commodity, or specialty chemical production; energy applications; waste treatment or pollutant degradation; and other TSCA subject uses.

2. A small governmental jurisdiction that is a government of a city, county, town, school district, or special district with a population of less than 50,000.

3. A small organization that is any not-for-profit enterprise which is independently owned and operated and is not dominant in its field.

In making this determination, the impact of concern is any significant adverse economic impact on small entities because the primary purpose of regulatory flexibility analysis is to identify and address regulatory alternatives ''which minimize any significant economic impact of the rule on small entities.'' 5 U.S.C. 603 and 604. Thus, an agency may certify under RFA when the rule relieves regulatory burden, or otherwise has no expected economic impact on small entities subject to the rule.

This proposed rule is an exemption, and is therefore expected to reduce the existing regulatory burden, which will benefit all submitters regardless of the size of the entity. The factual basis for the Agency's certification under RFA is presented in the small entity impact analysis prepared as part of the Economic Analysis for this proposed rule (Ref. 10), and is briefly summarized in Unit VI.

We continue to be interested in the potential impacts of the proposed rule on small entities and welcome comments on issues related to such impacts.

D. Unfunded Mandates Reform Act (UMRA)

EPA has determined that this action does not impose any enforceable duty or contain any unfunded mandate for State, local, or Tribal governments or the private sector, and does not otherwise have any effect on small governments, such that it is subject to the requirements of sections 202, 203, 204, or 205 of UMRA, 2 U.S.C. 1531–1538. As indicated previously, this action is expected to reduce costs. In addition, based on EPA's experience with past MCANs and Tier I and II exemptions, State, local, and Tribal governments have not been affected by these reporting requirements, and EPA does not have any reason to believe that any State, local, or Tribal government will be affected by this particular rulemaking. A search of past submissions to EPA demonstrated that no State, local, or Tribal government have ever submitted a MCAN, Tier I or Tier II notification to EPA. EPA has no information to indicate that any State, local, or Tribal government commercially manufactures the microorganisms covered by this action.

E. Executive Order 13132: Federalism

For the same reasons presented in Unit X.D., the Agency has determined that this action will not have a substantial direct effect on State or local governments, on the relationship between the national government and the States or local governments, or on the distribution of power and responsibilities among the various

levels of government. Thus, the Agency has determined that Executive Order 13132 (64 FR 43255, August 10, 1999) does not apply to this action.

F. Executive Order 13175: Consultation and Coordination With Indian Tribal Governments

For the same reasons presented in Unit X.D., the Agency has determined that this action will not have a substantial direct effect on tribal governments, on the relationship between the national government and Tribal governments, or on the distribution of power and responsibilities between the Federal Government and Indian tribes. Thus, the Agency has determined that Executive Order 13175 (65 FR 67249, November 9, 2000) does not apply to this action.

G. Executive Order 13045: Protection of Children From Environmental Health Risks and Safety Risks

EPA interprets Executive Order 13045 (62 FR 19885, April 23, 1997) as applying only to those regulatory actions that concern health or safety risks, such that the analysis required under section 5–501 of the Executive Order has the potential to influence the regulation. This action is not subject to Executive Order 13045 because it does not establish an environmental standard intended to mitigate health or safety risks, nor is it an ''economically significant regulatory action'' as defined by Executive Order 12866.

H. Executive Order 13211: Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use

This action is not subject to Executive Order 13211 (66 FR 28355, May 22, 2001), because it is not a significant regulatory action under Executive Order 12866.

I. National Technology Transfer and Advancement Act (NTTAA)

Section 12(d) of NTTAA, 15 U.S.C. 272 note, directs EPA to use voluntary consensus standards in its regulatory activities unless to do so would be inconsistent with applicable law or impractical. Voluntary consensus standards are technical standards (e.g., materials specifications, test methods, sampling procedures, etc.) that are developed or adopted by voluntary consensus standards bodies. This proposed rule does not impose any technical standards that would require EPA to consider any voluntary consensus standards.

J. Executive Order 12898: Federal Actions To Address Environmental Justice in Minority Populations and Low-Income Populations

This action does not have disproportionately high and adverse human health or environmental effects on minority or low-income populations because it does not affect the level of protection provided to human health or the environment. Therefore, this action does not involve special consideration of environmental justice-related issues as specified in Executive Order 12898 (59 FR 7629, February 16, 1994).

List of Subjects in 40 CFR Part 725

Environmental protection, Administrative practice and procedure, Biotechnology, Chemicals, Hazardous substances, Imports, Labeling, Microorganisms, Occupational safety and health, Reporting and recordkeeping requirements.

Dated: August 28, 2012.

James Jones,

Acting Assistant Administrator, Office of Chemical Safety and Pollution Prevention.

Therefore, it is proposed that 40 CFR chapter I be amended as follows:

PART 725—[AMENDED]

1. The authority citation for part 725 continues to read as follows:

Authority: 15 U.S.C. 2604, 2607, 2613, and 2625.

2. In § 725.3, add in alphabetical order the definition below to read as follows:

§ 725.3 Definitions.

* * * * *

Submerged standard industrial fermentation for purposes of this part, means a fermentation system that meets all of the following conditions:

(1) Submerged fermentation (i.e., growth of the microorganism occurs beneath the surface of the liquid growth medium).

(2) Any fermentation of solid plant material or insoluble substrate, to which *T. reesei* fermentation broth is added after the standard industrial fermentation is completed, may be initiated only after the inactivation of the microorganism as delineated in § 725.422(d).

* * * * *

3. In § 725.420, add new paragraphs (k) and (l) to read as follows:

§ 725.420 Recipient microorganisms.

* * * * *

(k) *Trichoderma reesei* strain QM6a used only in submerged standard industrial fermentation operations in which no solid plant material or insoluble substrate is present in the fermentation broth, fermentation may only be initiated after the inactivation of T. reesei as delineated in § 725.422(d).

(l) *Bacillus amyloliquefaciens* subsp. *amyloliquefaciens.*

[FR Doc. 2012–21843 Filed 9–4–12; 8:45 am]

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FEDERAL COMMUNICATIONS COMMISSION

47 CFR Part 101

[WT Docket No. 10–153; FCC 12–87]

Facilitating the Use of Microwave for Wireless Backhaul and Other Uses and Providing Additional Flexibility To Broadcast Auxiliary Service and Operational Fixed Microwave Licensees

AGENCY: Federal Communications Commission.

ACTION: Proposed rule.

SUMMARY: In this document, the Commission seeks more detailed comments on specific proposals made by parties to allow use of smaller antennas and wider channels in other part 101 microwave bands. We also seek comment on a proposal to revise our rules to change our treatment of smaller antennas in the 10.7–11.7 GHz band (11 GHz band). We also seek comment on additional ways to increase the flexibility, capacity, and cost-effectiveness of the microwave bands, while protecting incumbent licensees in these bands. In the *Second Notice of Inquiry,* we seek comment on making additional changes to our antenna standards to reflect advances in technology, accommodate non-parabolic antennas, and harmonize our standards with international standards. By enabling more flexible and cost-effective microwave services, the Commission can help foster deployment of broadband infrastructure across America.

DATES: Submit comments on or before October 5, 2012. Submit reply comments on or before October 22, 2012.

ADDRESSES: Federal Communications Commission, 445 12th Street SW., Washington, DC 20554. You may submit comments, identified by FCC 12–87, or by WT Docket No. 10–153, or by any of the following methods:

Federal eRulemaking Portal: http://www.regulations.gov. Follow the instructions for submitting comments.

Federal Communications Commission's Web Site: http://