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Developing Environmentally Safe Products

A Project XL Proposal

PPG Industries, Inc.
Pittsburgh, PA

Draft

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I. Introduction

A. Description of company, facility, community and region

PPG Industries is a leading global supplier of coatings, continuous-strand fiberglass, flat and fabricated glass, and chemicals. PPG is composed of 16 strategic business units in the four major product areas. The business units include aircraft glass, automotive glass, automotive replacement glass, flat glass, aerospace coatings and sealants, architectural coatings, automotive coatings, automotive refinish, industrial coatings, packaging coatings, chlor-alkali and derivatives, fine chemicals, optical products, silica products, electronics and specialty fiber glass, and reinforcement fiber glass. The company has about 50 production facilities in the United States and 110 worldwide, including subsidiaries, joint venture, and equity affiliates. PPG employs approximately 32,500 people worldwide.

The Environment, Health, and Safety policy of PPG is to manufacture, sell, and distribute products worldwide in a manner that is safe and protective of our employees, neighbors, customers and other stakeholders, and the environment. In fulfilling its policy, PPG has made a commitment to continuous improvement and develops and implements plans using good management practices. This commitment includes our full participation in, and support of, the chemical industry's Responsible Care® and coatings industry's Coatings Care Initiatives™. Each strategic business unit is responsible for planning and implementing its activities in a manner consistent with the policy and its guiding principles. The corporate Environment, Health, and Safety (EH&S) Department is responsible for assisting the operating units with their obligation to carry out this policy, its goals and objectives. The EH&S department consists of approximately 100 professionals in areas of environmental engineering, industrial hygiene, toxicology, health, and safety.

PPG has been recognized for its environment, health, and safety efforts and has received the following awards during the last 12 months: Recognition on Occupational Safety and Health performance in China, the Louisiana Governor's Community Outreach and Involvement Award and Governor's Environmental Leadership Award, Operation for six years with no away-from work incidents in Canada, the Responsible Care Pollution Prevention Award of the Ohio Chemical Council, and the Director's Award for Superior Pollution Prevention of the Ohio EPA.

PPG has been a technological leader for 116 years. The company has introduced many products and process innovations. PPG's goal is to attain significant amount of sales from products that are five years old or less. Therefore, PPG registers many new chemical substances with the EPA each year. New chemical substances have been developed in research and development facilities located at Monroeville, Allison Park, and Harmarville, all in the greater Pittsburgh, PA area. PPG utilizes the Gatekeeper process or another similar process for new product development from the point an idea is submitted through commercialization of the product. PPG Industries is incorporating EPA OPPT's Pollution Prevention (P2) Framework models in its new product development process. PPG will be able to develop safer products and to assess environmental and health risks of chemicals using P2 Framework models. This is consistent with PPG's EH &S policy.

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II. Project Description

A. Overview of Project

The EPA's (P2) Framework for assessing environmental and health risks of chemicals are being incorporated into PPGs Gatekeeper process or another similar process for new product development. The information obtained from the P2 Framework allows PPG to make more informed decisions about the health and ecological risks and to eliminate raw materials and products with the greatest potential hazard in the very early stage of product development. Therefore, this project has an immediate and positive impact on reducing the potential hazard from chemical manufacturing operations. It also minimizes the potential synthesis or generation of hazardous wastes.

The P2 Framework will enable PPG to design safer products and conduct an analysis similar to that done by EPA with each new product submitted for Pre-manufacture notification (PMN). PPG will incorporate information obtained from the P2 Framework along with PMN submissions. As a result, EPA would generally complete its review of PPG materials in a shorter time period than that is normally required for other materials. Current EPA regulations require that the manufacturer wait 90 days after PMN submission prior to manufacture of a new product. PPG proposes that if materials are not considered to be a concern based on information from the P2 Framework and EPA's initial review, they be allowed to begin manufacture after 45 days rather than 90 days.

PPG proposes to share its expertise in the use of P2 Framework with scientific and business communities from various chemical and coatings companies and stakeholders. PPG issued a press release in the PR Newswire describing its activities related to using the P2 Framework. This press release will help other companies and stakeholders to understand the benefits of P2 Framework. PPG will be available to participate in 2-3 meetings or workshops per year with community leaders, other company members and stakeholders to promote the use of P2 Framework. PPG will also publish a validation study to verify the accuracy of P2 Framework by comparing aquatic toxicity data from the P2 Framework models with data from toxicity testing.

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B. **Specific Project Elements**

Implementation of the P2 Framework

PPG is incorporating the P2 Framework as part of its Gatekeeper process or another similar process for new product development. During the early stages, information from sales, marketing, technical, and manufacturing is collected and evaluated to help determine whether the product should be developed. The P2 Framework will provide a mechanism for incorporating environment and health information at these stages. By utilizing the information obtained from the Framework, potential health and environmental issues as well as opportunities for pollution prevention can be identified at an early stage in new product development. PPG will provide the EPA an output of P2 Framework predictions in its PMN submission of new chemicals under the US Toxic Substances control Act (TSCA).

Support of P2 Framework

PPG will reach out and communicate with scientific professionals from chemicals and coatings companies and stakeholders. PPG will work with scientific staffs from other companies to demonstrate how PPG utilizes P2 Framework models in the early stages of product development. PPG will also demonstrate how the data generated from P2 assessment models help to select environmentally sustainable products in the R&D stage based on the health and environmental hazard assessment. PPG will be a partner with the EPA in an effort to make stakeholders aware of the P2 Framework and to encourage companies to apply the P2 Framework Some examples for PPG's outreach plans are summarized below:

Validation of P2 Framework models

PPG in a joint effort with EPA, conducted a validation project to evaluate P2 Framework models used to predict aquatic toxicity of chemicals based on the analysis of chemical structure. PPG and EPA compared experimental aquatic toxicity data with data generated using the P2 Framework for the same set of materials that had already been commercialized at PPG. This validation study verified that the P2 Framework model provided a reliable method for assessing aquatic toxicity. This validation report will be published in one of the journals where the technical staffs from other companies can be reached.

PPG will also present this data as a poster presentation in one of the scientific meetings. The meeting will provide an opportunity for PPG to conduct a scientist to scientist contact. We can demonstrate what the P2 assessment is and how the model helps to identify environmentally unfavorable products at the R&D stage of product development.

PPG Press Release

PPG issued a press release describing PPG's intention to utilize the P2 Framework. The objective of this press release was:

> By using the P2 Framework models, we can access the EPA database to design, develop and manufacture safer and more sustainable products.
>
> Researchers can evaluate several raw materials in the design stage and make a selection based in part on data from the P2 Framework.

The P2 Framework can reduce the amount of costly and often lengthy testing that PPG undertakes to understand the effects of coatings and chemicals in development. As a result, new products can reach the market sooner.

Using the P2 Framework enables PPG to conduct an analysis similar to that done by EPA.

Meetings and Workshops

PPG intends to communicate with other industries on the uses and benefits of the P2 Framework. PPG will be available to participate 2-3 seminars, meetings or workshops per year solely or in collaboration with EPA to provide information on the benefits of P2 Framework and will act as an advocate for the use of the models.

PPG has communicated with Environment Canada that the P2 Framework is a reliable tool for predicting aquatic toxicity on polymers developed at PPG. We intend to include P2 Framework predicted data for aquatic toxicity in some of PPG's future registrations to Canada. PPG will continue to communicate with international agencies on the use of P2 Framework if opportunities are given. Some of the validation data was presented by EPA/OPPT during the OECD meeting last fall.

III. Project XL Criteria

A. Superior Environmental Performance

PPG introduced many different new products throughout the year. As discussed in the previous section, PPG utilizes a Gatekeeper process or another similar process for new product development from the point an idea is submitted through the commercialization of the product. Environmental and health information will be assessed in early stages using P2 Framework models. Only environmentally favorable materials will be forwarded to the next stage. In addition, the P2 Framework will be utilized to evaluate raw materials in the design stages. PPG will reduce or eliminate use of raw materials with high environmental impact. Normally, in this very early stage of product development, little or no actual health or environmental data exist. Even when chemicals selected for commercialization in later stages of the new product development process, these chemicals are submitted to EPA for a pre-manufacturing notification with little or no data. At this point, EPA will evaluate potential health and environmental hazard using the P2 Framework models during 90-day review period. Thus, the current use of the P2 Framework by the EPA is at the end of product development. Companies have already invested a great amount of time and money into a new product when a PMN is submitted to the EPA. Potential health and environmental issues as well as opportunities for pollution prevention will be identified at an early stage in new product development by utilizing the information obtained from this Framework. This process allows PPG to select less hazardous materials for use in the final product and can reduce the production of hazardous waste. This will financially benefit PPG tremendously. PPG plans to submit the results obtained from P2 Framework in earlier stages of new product development for each PMN submission. This will reduce the amount of work and time require for the Agency to assess the new chemical for review.

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The other part of PPG's XL project is to reach out and communicate with scientific professionals and business managers from other industries and stakeholders. PPG commits to communicate in several different ways.

Publishing a validation report of P2 Framework models in a scientific journal.
Presentation of a validation report at one of the scientific meetings.

Press Release describing PPG's intention to incorporate P2 Framework and informing the benefit associated with use of P2 Framework.

Participation of seminars, meetings or workshops 2-3 times per year sorely or in collaboration with EPA to inform the benefits of P2 Framework and to act as an advocate on the use of the models.

Continue to communicate with other Government Agencies showing the reliability of the P2 Framework models if opportunities are given.

B. Flexibility and Other Benefits

PPG knows that research and development can enhance the value of its products, and increases its customers' competitive advantage. PPG invests hundreds of million dollars each year in developing new and improved products and technologies, as well as adapting current technologies to new markets. As mentioned earlier, one of the PPG's goals is to attain significant amount of sales from products that are five years old or less. Therefore, new product development and product improvement are a major part of research and development at PPG. Each new product development goes through several different stages from the point an idea is submitted through manufacture of the product at PPG. Significant costs are associated with each stage of new product development. When a new product candidate is dropped at any stage in the process of product development, the process must be restarted with an another candidate. The money and time spent on the product that is dropped can not be recovered. Previously, the P2 assessment was applied by EPA at the end of the product development during a 90-day PMN review process that was just prior to the commercialization of the product. If the material is dropped at this late stage due to potential health and environmental concerns, the impact is significant to the company since tremendous resources have been spent on the product. A benefit of using the P2 Framework is to minimize the costs and time required for the new product development. By using P2 assessment in the early stage of product development, the new product candidate can be easily dropped or modified without wasting significant time and costs of the company.

Producing less hazardous materials can reduce manufacturing cost since waste management and treatment processes can be minimized during the manufacturing of the product. This will benefit workers and the publics since they will not be exposed to the hazardous materials. This will also financially benefit PPG.

The P2 Framework can reduce the costly and often lengthy testing that PPG undertakes to obtain the information that can be obtained from the P2 Framework. As a result, new products can reach market sooner. That benefits the business greatly by increasing a market share and life of the new product. In addition, if the project XL proposal is implemented, PPG is able to manufacture new products sooner by eliminating the waiting period of PMN review. Manufacturing the new product in 45 days provides PPG

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opportunity to increase the market share, and to continue on innovation or improvement of new products. This will be a great opportunity for PPG to facilitate new product development and improvement without any downtime period.

PMN submission is an essential part of new product development for any companies. During the fiscal year 1999, US companies filed approximately 1300 PMN notices describing new industrial chemicals they want to introduce into the market, an increase over the previous years. This increase can have a great impact on staff resources at EPA. In this proposal, PPG intends to provide to EPA an output of P2 Framework predictions in its PMN submission of new chemicals under TSCA. This will relieve EPA's resources for their effort in reviewing PPG's submissions. The use of P2 assessment in early stages of new product development improves the environmental performance of the product and will aid EPA's goal of reducing materials with greater hazard and achieving pollution prevention.

C. Stakeholder Involvement

Most of the new product development activities will occur at PPG research centers that are located in suburbs of Pittsburgh, PA. PPG public communication committee intends to inform any significant activities related to this proposal.

This proposal primarily will affect the regulatory community of EPA. PPG intends to communicate effectively with the agency using e-mails, letters, meetings, and telephones.

D. Innovation or Pollution Prevention

In this XL proposal, PPG proposes a change to its new product development process. These changes will significantly improve environmental protection and promote pollution prevention. In addition, if this project XL were approved, it would provide PPG the opportunity to develop products sooner with no great environmental hazard.

E. Transferability

There are two specific project elements in this proposal. One element is to utilize the P2 Framework into new product development process and for PMN submissions. The other element is to support the use of the P2 Framework. PPG intends to reach out and communicate with scientific professional from other industries. The reliability and usefulness of P2 Framework will also be demonstrated in a validation report that PPG will publish in a scientific journal.

F. Feasibility

PPG business managers have been fully informed of the methodology and advantage of P2 Framework. They have supported this program and are willing to provide any technical and financial support to incorporate this program into new product development process. EPA and the University of New Hampshire (UNH), through a grant from the EPA have provided information, training, and technical assistance on the P2 Framework to PPG. PPG has established a good relationship with EPA and UNH.

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PPG is incorporating the P2 Framework into the new product development process. The information obtained from P2 Framework will be incorporated for PMN submissions. PPG has already initiated its effort for outreach activities through scientific organizations.

G. Evaluation, Monitoring, and Accountability

This project will be evaluated by the number of PMN submission with the P2 Framework assessment made by PPG to EPA. Materials considered to be safe based on the information obtained from P2 Framework will be accounted for separately since they would be allowed to be manufactured in 45 days after the PMN submission. PPG intends to evaluate new product candidates using P2 Framework and to submit the information on this evaluation to EPA with the PMN submission

H. Shifting of Risk Burden

This proposal will reduce and not shift a risk burden from one population to another. This proposal will benefit the public, stakeholders, industries, and EPA.

IV. Requested Flexibility

TSCA is a law regulating aspects of the manufacture, importation, processing, distribution, use and disposal of chemical substances. Section 5 of TSCA regulates new chemical substances. Section 5 requires manufacturers and importers to submit a PMN to EPA for new chemical substances at least 90 days prior to commencing commercial manufacturing. During the 90 day PMN review period, EPA determines where there is an unreasonable risk to human or the environment. The initial review process occurs within 20 to 25 days into the assessment process. PPG will submit information obtained from P2 Framework with the future PMN submissions. This will aid EPA's assessment process. Therefore, PPG proposes that PPG be allowed to manufacture these future PMN materials in 45 days if the material does not show an environmental or health concern during the EPA's initial review. If environmental or health concern is indicated by P2 Framework or EPA's initial review, PPG does not intend to obtain regulatory flexibility.

V. Schedule Information

Implementation of the P2 Framework into the new product development process is being initiated. Use of P2 Framework in the process is a continuing process.

Support of P2 Framework – PPG issued a press release. Validation report will be published. A participation in meetings and workshops are continuing processes.

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Abstract

Project XL

Draft Proposal

Introduction

PPG Industries, Inc. is a leading global supplier of coatings, continuous-strand fiberglass, flat and fabricated glass and industrial and specialty chemicals. Established near Pittsburgh, PA in 1883, today the company has about 50 production facilities in the United States and 110 worldwide. PPG employs about 32,500 people. Further information on PPG Industries can be obtained at www.ppg.com/ . The environment, health and safety policy of PPG Industries is to manufacture, sell and distribute products worldwide in a manner that is safe and protective of our employees, neighbors, customers and other stakeholders, and the environment. PPG also commit full participation in, and support of, the Responsible Care® and Coatings Care Initiative™.

Any questions for this proposal may be addressed to:
PPG: Jean S. Chun, Tel: 412-492-5482
EPA Region 3: Chris Menen, Tel: 215-814-2786
EPA/XL HQ: Lisa Reiter, Tel: 202-260-9041

Project Description

PPG Industries, Inc. is incorporating the Environmental Protection Agency (EPA)'s Pollution Prevention (P2) Framework for assessing environmental and health risks of chemicals in its new product development process. The P2 Framework will enable PPG to design safer products and conduct an analysis similar to that done by EPA with each new product submitted for Pre-manufacture notification (PMN). As a result, EPA would generally complete its review of PPG materials in a shorter time period than that is normally required for other materials. Current EPA regulations require that the manufacturer wait 90 days after PMN submission prior to manufacture of a new product. PPG proposes that, if materials are not considered to be a concern based on information from the P2 Framework and EPA's initial review, they be allowed to begin manufacture after 45 days rather than 90 days.

Superior Environmental Performance

The information obtained from the P2 Framework allows PPG to make more informed decisions about the health and ecological risks and to eliminate raw materials and products with the greatest potential hazard in the very early stage of the product development. Therefore, this project has an immediate and positive impact to reduce the potential hazard from chemical manufacturing operations. It also minimizes the potential synthesis or generation of hazardous wastes. PPG will also share its expertise in the use of P2 Framework with other companies. PPG would do this by participating in meetings or workshops 2-3 times per year sorely or in collaboration with EPA to reach out other organizations for use of P2 assessment. PPG will also publish a validation study to verify the accuracy of EPA's database. Production of more environmentally safer chemicals and pollution prevention can be achieved by encouraging other companies to use P2 assessment in early product development.

Regulatory Flexibility

By using P2 Framework for PPG's new product development process, PPG will produce more environmentally safe materials. PPG proposes that if materials are not considered to be a concern based on P2 Framework and EPA's initial review, PPG be permitted to begin manufacture of chemicals 45 days after PMN submission.

Stakeholder Involvement

PPG issued a press release in PR Newswire to use P2 Framework to make more safe chemicals. This press release will help other companies and stakeholders to understand the benefits of P2 Framework. PPG will be available to participate 2 to 3 meetings or workshops per year with community leaders, other company members and stakeholders to promote use of P2 Framework. PPG will publish a validation study to verify the accuracy of P2 Framework by comparing aquatic toxicity data from the P2 Framework models with data from toxicity testing.

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