

ATTACHMENT C

Control Technology Plan for Bunge Milling's Danville, Illinois Conventional Soybean Plant

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1.0 Introduction

This Control Technology Plan (CTP) is Attachment C to a Consent Decree signed by Bunge Milling, the United States, and the State of Illinois, among others. This CTP describes the emission reduction program that Bunge Milling shall implement at its conventional soybean extraction plant which it owns and operates in Danville, Illinois (Danville, Illinois Soybean Plant). This CTP contains:

- (a) Identification of all units to be controlled;
- (b) Engineering design criteria for all proposed controls;
- (c) Applicable emission limits for VOC and SO₂, based on Section 2.0 of this CTP;
- (d) Monitoring parameters for all control equipment;
- (e) A schedule for installation;
- (f) Identification of units to be emission tested and definition of the test methods that will be used;
and
- (g) A procedure for setting emission limits following start-up of emissions control equipment.

2.0 Program Summary

Bunge Milling shall implement a program with the goal of achieving a reduction of volatile organic compound (VOC) emissions from the soybean solvent extraction plant and sulfur dioxide (SO₂) emissions from the cogen boiler at the Danville, Illinois Soybean Plant.

The VOC emission reduction component of this program consists of a series of projects to improve operation of the solvent extraction system at its soybean processing plant. The process improvement projects will aid the Danville, Illinois Soybean Plant in lowering overall VOC emissions. For its Danville, Illinois Soybean Plant, Bunge Milling will complete the following projects: upgrade the mineral oil system and improve control of hexane temperature to the extractor. The VOC emission limit will be established pursuant to Section 10.0 of this CTP.

The SO₂ emission reduction component of this program consists of Bunge Milling conducting an optimization study on the existing lime injection system used on the main circulating fluidized bed (CFB) coal boiler at its Danville, Illinois Soybean Plant. If the program reasonably meets the performance criteria in Section 4.0 of this CTP, Bunge Milling will operate the optimized lime injection system according to the schedule in Section 7.0 of this CTP. The emission reduction benefits from this program will be addressed in the final SO₂ emission limit for the boiler, which will be established pursuant to Sections 7.0 and 10.0 of this CTP.

2.1. Study Protocol: By no later than 45 days after lodging of the Consent Decree, Bunge Milling shall submit a study protocol to EPA and the Illinois Environmental Protection Agency (IEPA) for approval. The protocol shall address the procedures and schedule for both the optimization and demonstration phases of the study. This plan must be submitted at least 30 days prior to beginning any optimization study.

2.2. Evaluation Report: By no later than 240 days after lodging of the Consent Decree, Bunge Milling shall complete the optimization study and submit a report to EPA and IEPA on the evaluation of the optimization study on the existing lime injection system. The report shall include a determination whether the existing lime injection system is capable of being optimized to meet the performance criteria in Section 5.0 of this CTP. Specifically, the report shall include monitoring data, and all assumptions and calculations used to estimate the emission reduction benefit of the optimized technology.

2.3. Based on the results of the optimization study, Bunge Milling shall propose a final emission limit for SO₂ in the evaluation report required under Section 2.2 above.

2.4. (a). Evaluation of Technical Feasibility: The technical feasibility portion of the evaluation report required by Paragraph 2.2 shall include a detailed engineering analysis of the enhanced lime injection system and focus on whether the optimized technology can meet the performance criteria specified in Section 5.0 of this CTP. The engineering analysis shall include, as appropriate, manufacturer's design specifications and performance criteria, any data from pilot or full-scale implementations of the technology that are relevant to this proposed evaluation, and any estimates of emission reductions for each level of lime injection, all calculations, assumptions and/or operating data used to estimate control efficiencies.

(b). Evaluation of Economic Feasibility: The cost effectiveness portion of the evaluation will be conducted on an annualized basis, in terms of cost per ton of reduced emissions, and submitted for EPA and IEPA approval. The cost per ton estimates shall take into account all costs associated with the installation and implementation of the control measure in question, and may include costs associated with process and plant changes necessary to accommodate the control measures provided that the report also addresses any benefits to Bunge Milling from such changes. The report shall include detailed supporting information for the determination of the cost effectiveness including all calculations and assumptions. For purposes of the Consent Decree, a cost of less than \$5,000 per ton of SO₂ or \$5,000 per ton of NO_x removed/recovered is presumptively cost effective, and a cost of greater than \$10,000 per ton of SO₂ or \$10,000 per ton of NO_x removed/recovered is presumptively not cost effective.

3.0 Process Flow Diagrams

This section includes the following flow diagrams:

Diagram 3.1 – General Process

Diagram 3.2 – Upgrade of Mineral Oil System

Diagram 3.3 – Improve Control of Hexane Temperature to the Extractor

Diagram 3.1 General Process

The following process block diagram presents a general representation of the solvent extraction process at a typical Bunge Milling vegetable oil solvent extraction plant.

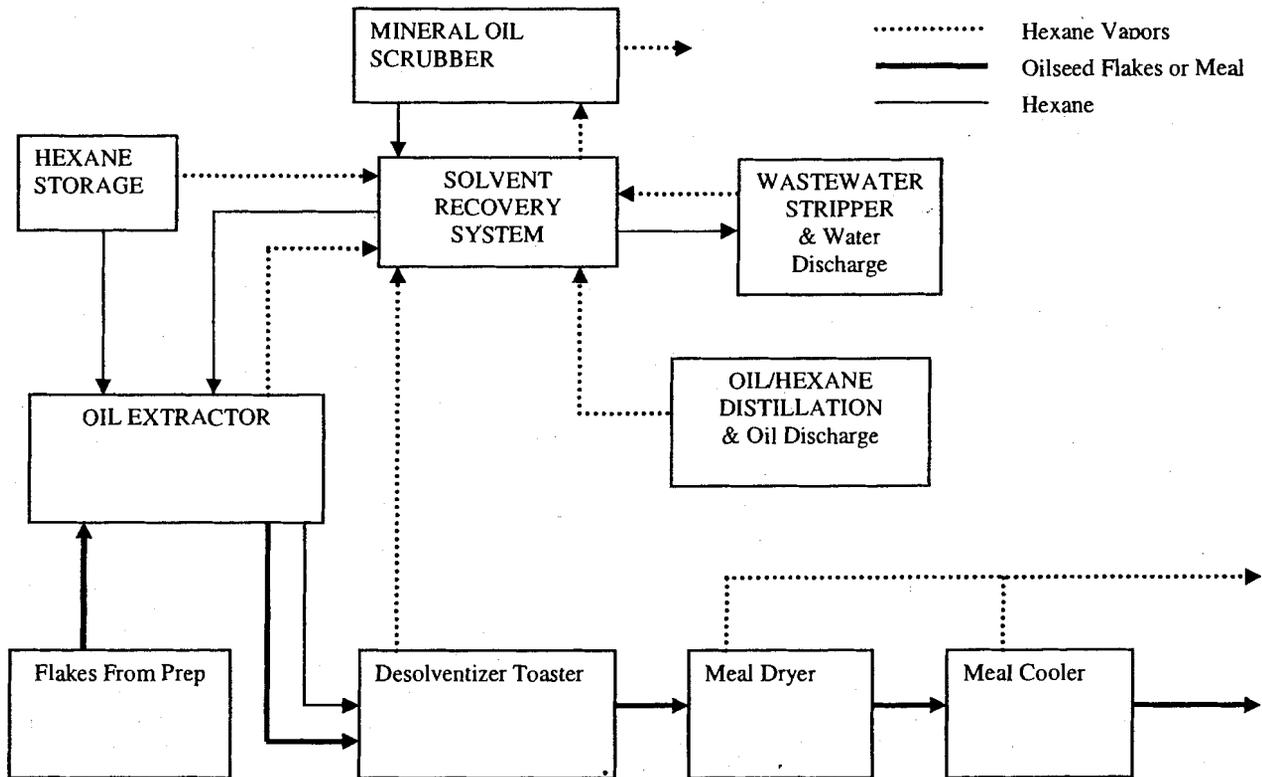
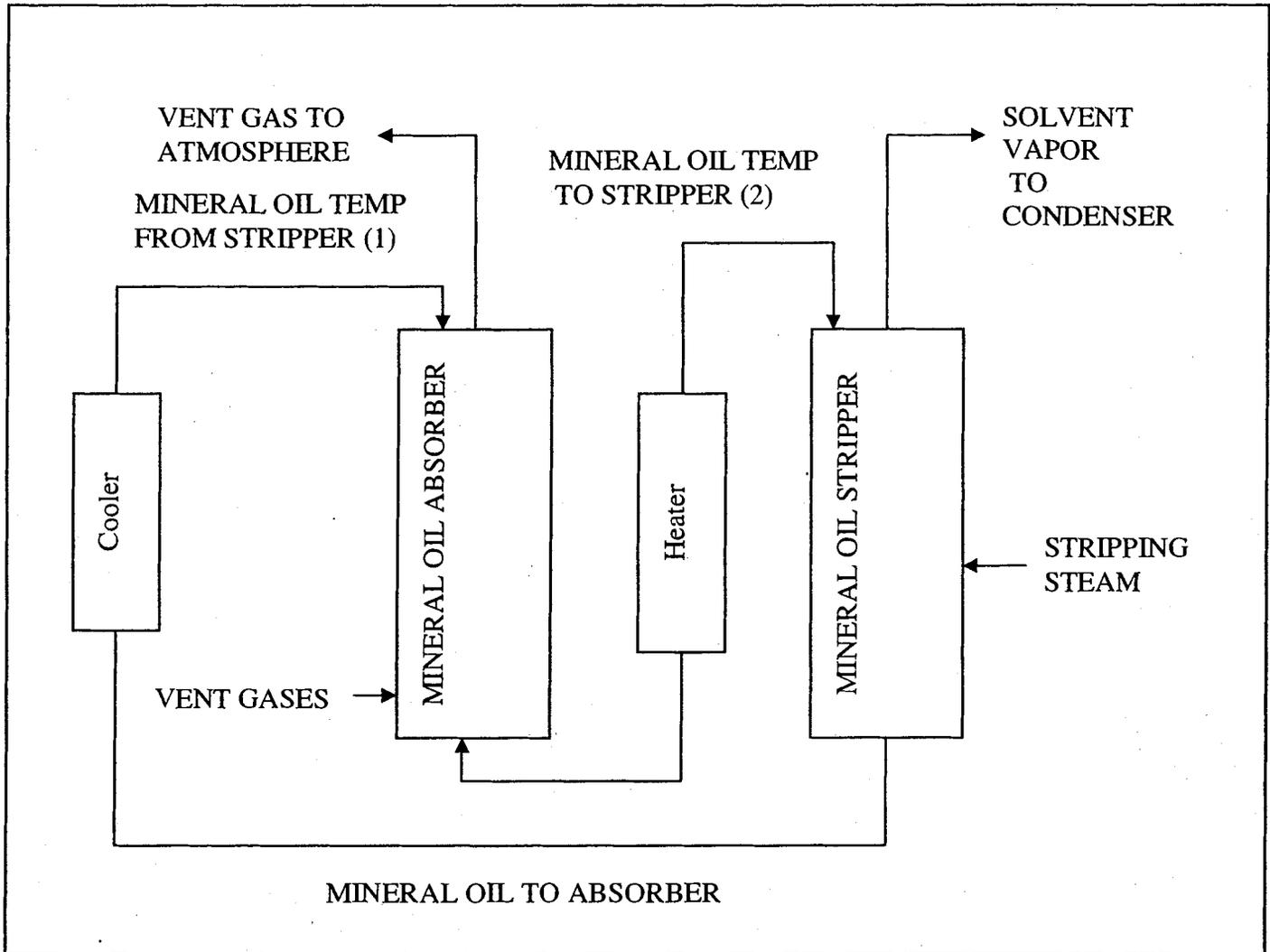


Diagram 3.2 Process Flow Diagram for Mineral Oil System Upgrade

The following flow diagram presents the proposed volatile organic compound (VOC) control technology.



Upgrade Mineral Oil System (MOS)

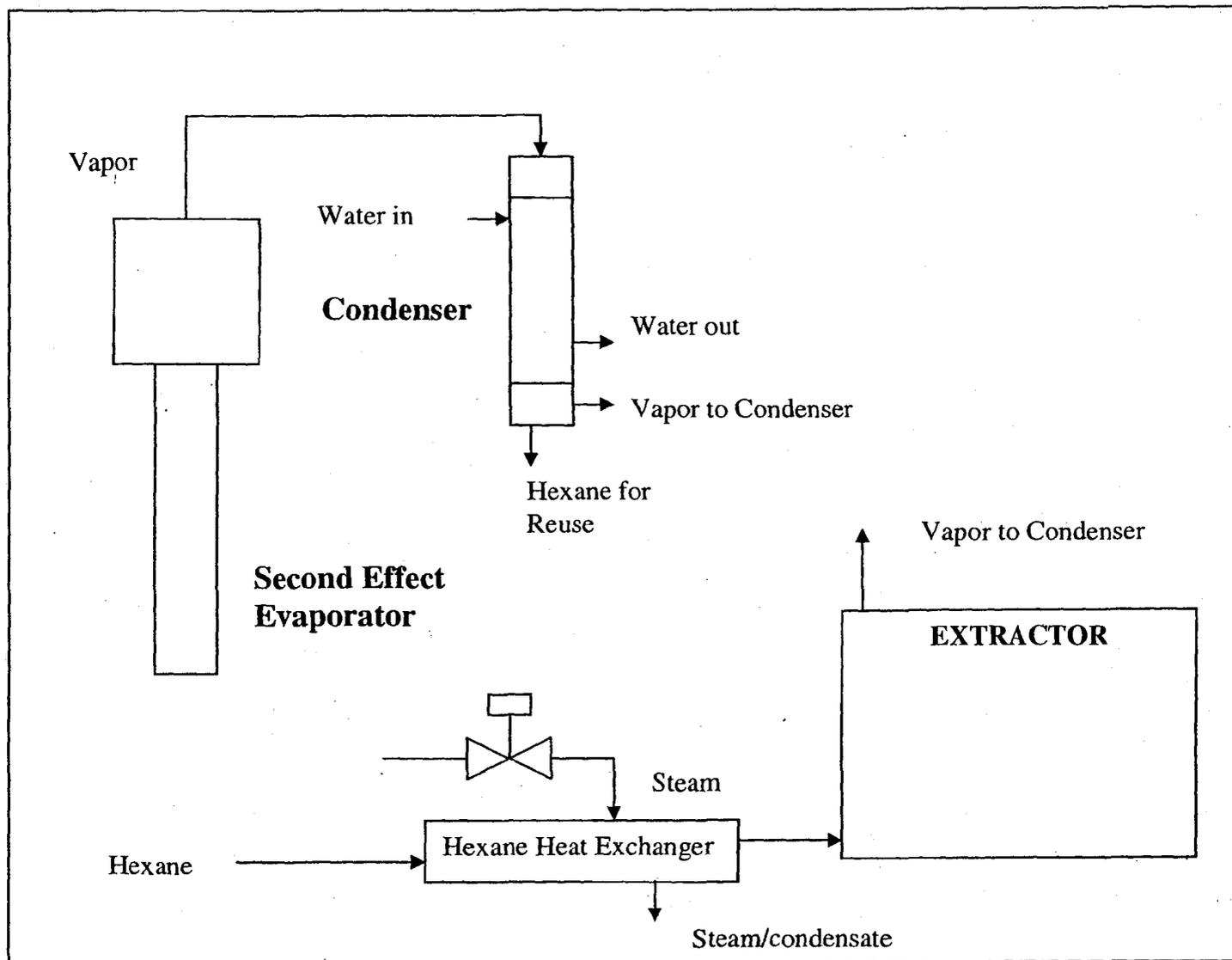
Modify and improve the existing MOS, including system controls.

The Mineral Oil Temperature from Stripper (1) (see Diagram 3.2 above) will be maintained at a maximum operating temperature of 100°F under normal operating conditions.

The Mineral Oil Temperature to Stripper (2) (see Diagram 3.2 above) will be maintained at a minimum operating temperature of 215°F under normal operating conditions.

Diagram 3.3 Improve Control of Hexane Temperature to the Extractor.

The following flow diagram presents the proposed VOC control technology.



Improve Control of Hexane Temperature to the Extractor

Modify and improve heating of hexane to the extractor by isolating the uncontrolled Second Effect Evaporator vapor from the extractor and adding a steam hexane heater to regulate temperature of hexane to the Extractor.

4.0 Emission Units Requiring Pollution Control Equipment

The following emission units and control equipment have been designated as affected units in the Consent Decree and have emission limits requiring pollution control technology or alternative projects designed to reduce emissions. Changes to the requirements listed in the following table may be considered non-material modifications under Paragraph 5.b. of the Consent Decree, provided Bunge Milling (1) achieves the emission limits specified in this CTP and the Consent Decree and (2) obtains prior written approval of the change(s) from EPA and IEPA as provided in Paragraph 5.b. of the Consent Decree.

Emission Unit Description	Control Equipment/Optimization Description
Main Circulating Fluidized Bed (CFB) Coal Boiler	Optimization of Lime Injection System (SO ₂)
Mineral Oil System	Upgrade of Mineral Oil System (VOC)
Extractor	Improve Control of Hexane Temperature (VOC)

5.0 Engineering Design Criteria for Pollution Control Equipment

Bunge Milling shall report any deviation from the design criteria listed here in the semi-annual reports required by Paragraph 47 of the Consent Decree and as required under other state and federal rules. Note that the specific design criteria listed here are preliminary and subject to change pending development of additional data. Changes to the requirements listed in the following table may be considered non-material modifications under Paragraph 5.b. of the Consent Decree, provided Bunge Milling (1) achieves the emission limits specified in this CTP and the Consent Decree and (2) obtains prior written approval of the change(s) from EPA and IEPA as provided in Paragraph 5.b. of the Consent Decree.

Emission Unit Description	Control Equipment/Optimization Description	Design Criteria Targets
Main CFB Coal Boiler	Optimization of Lime Injection System (SO ₂)	TBD ⁽¹⁾
Mineral Oil System	Upgrade of Mineral Oil System (VOC)	See Section 6.0
Extractor	Improve Control of Hexane Temperature (VOC)	Hexane Temperature to Extractor 135°F to 145°F

⁽¹⁾ To be determined. See Section 2.0 of this CTP. 90% is the target control efficiency for reducing SO₂ emissions using the optimized existing lime injection system. The actual control efficiency will be based on the results of the optimization study, and technical and economic feasibility.

6.0 Monitoring Parameters for Pollution Control Equipment

Beginning no more than 30 days following startup of the control equipment described below, or thirty days from lodging of the Consent Decree, whichever is later, Bunge Milling shall monitor the parameters listed below. Changes to the requirements listed in the following table may be considered non-material modifications under Paragraph 5.b. of the Consent Decree, provided Bunge Milling (1) achieves the emission limits specified in this CTP and the Consent Decree and (2) obtains prior written approval of the change(s) from EPA and IEPA as provided in Paragraph 5.b. of the Consent Decree.

All monitoring data collected shall be recorded and maintained on-site. Any deviation from monitoring frequency, record keeping and/or range shall be reported in the semi-annual reports required by Paragraph 47 of the Consent Decree and as required under other state and federal rules.

Emission Unit Description	Control Equipment / Optimization Description	Parameter Monitored	Compliance Operating Range/Limit	Monitoring Frequency
Main CFB Coal Boiler	Optimization of Lime Injection System (SO ₂)	SO ₂ Concentration	0.8 lbs SO ₂ /mmBtu (per 24-hour day average)	Continuous
Mineral Oil System	Upgrade of Mineral Oil System (VOC)	Hot Mineral Oil Temperature Cold Mineral Oil Temperature	≥ 215°F ≤ 100°F	Once per operational day
Extractor	Improve Control of Hexane Temperature (VOC)	Hexane Temperature to Extractor	135°F to 145°F	Once per operational day

7.0 Emission Limits

Bunge Milling shall comply with the emissions limits in the table below pursuant to this CTP and the Consent Decree. Bunge shall report any deviation from emission limits in the semi-annual reports required by Paragraph 47 of the Consent Decree and as required under other state and federal rules.

Emission Unit Description	Control Equipment / Optimization Description	Pollutant	Emission Limit(s)
Main CFB Coal Boiler	Optimization of Lime Injection System	SO ₂	TBD ⁽¹⁾
Mineral Oil System	Upgrade of Mineral Oil System	VOC	Solvent Loss Ratio ⁽²⁾
Extractor	Improve Control of Hexane Temperature (VOC)	VOC	Solvent Loss Ratio ⁽²⁾

⁽¹⁾ See Sections 2.0 and 10.0 of this CTP. Value to be determined once optimization study has been completed and results have been evaluated by EPA and IEPA.

⁽²⁾ The procedure for establishing this limit is outlined in Section 10.0 of this CTP.

8.0 Schedules for Emission Reduction Projects

Bunge Milling shall report any deviation from the applicable schedules in the semi-annual reports required by Paragraph 47 of the Consent Decree and as required under other state and federal rules.

The following schedule implements Paragraphs 16 through 18 of the Consent Decree:

Emission Reduction Project	Schedule
Submit Protocol for Optimization Study of Lime Injection System (SO ₂)	Within 45 days of lodging of the Consent Decree
Complete Optimization Study of Lime Injection System and Submit Evaluation Report (SO ₂)	Within 240 days after lodging of the Consent Decree
Complete Optimization of Lime Injection System (SO ₂)	Within one year after submittal of Evaluation Report ⁽¹⁾
Upgrade of Mineral Oil System (VOC)	December 31, 2005
Improve Control of Hexane Temperature to the Extractor (VOC)	December 31, 2007

⁽¹⁾ Associated deadline applies only if EPA and IEPA determine that the results of the Lime Injection Optimization Study reasonably meet the performance criteria in Section 5.0 of the CTP.

9.0 Pollution Control Equipment Performance Test Schedule and Test Methods

By no later than lodging of the Consent Decree, Bunge Milling shall meet the applicable requirements of 40 CFR Part 60 for the continuous emissions monitoring system (CEMS) for SO₂ as set forth in the table below.

Emission Unit / Pollution Control Device	Pollutant(s) Tested	Test Method
Optimization of Lime Injection System	SO ₂	CEMS 40 C.F.R. Part 60 Relative Accuracy Test Assessment (RATA) if long-term limit (i.e., 30-day average)

10.0 Procedures for Optimization of Control Equipment and Setting Emission Limits

Lime Injection Optimization Study

Bunge Milling shall establish a new SO₂ emission limit for the Main CFB Coal Boiler based on the results of an optimization study on the existing lime injection system.

Prior to the optimization study, Bunge Milling shall submit a study protocol to EPA and IEPA for approval. The protocol shall address the procedures and schedule for both the optimization and demonstration phases of the study. This plan must be submitted at least 30 days prior to beginning any optimization study.

Following completion of the optimization study, Bunge Milling shall submit a proposed final SO₂ emission limit in the Evaluation Report required under Section 2.2 of this CTP. Bunge Milling's submission will propose a SO₂ emission limit in the form of "lb SO₂/MMBtu" for approval by EPA and IEPA. To demonstrate compliance with the proposed limit, Bunge Milling will use a CEMS (for a 24-hour average limit).

10.1 VOC Emissions Limits

Interim VOC SLR Emissions Limit

In accordance with Attachment A to the Consent Decree, Bunge Milling shall begin to account for solvent loss and quantity of oilseeds processed to comply with a 0.19 gal/ton VOC solvent loss ratio (SLR) at the Danville, Illinois Soybean Plant. The first compliance determination with this interim limit will be based on the first 12 operating months of data collected after the date on which Bunge Milling begins to account for solvent loss under this paragraph.

Final VOC SLR Emissions Limit

In accordance with Attachment A to the Consent Decree, Bunge Milling shall comply with a final VOC SLR limit for the Danville, Illinois Soybean Plant established according to the requirements of the VOC CTP for Defendants' Soybean Extraction Plants and Paragraphs 31 through 36 of the Consent Decree.

10.2 Root Cause Analysis for VOC Malfunction Events

General Provisions. Pursuant to Paragraph 21 of the Consent Decree, and as described below, Bunge Milling shall implement a program, for a period of 24 months following entry of the Consent Decree, to investigate the cause of VOC malfunction incidents occurring during that time period, to take reasonable steps to correct the conditions that cause or contribute to such malfunction incidents, and to minimize malfunction incidents.

Investigation and Reporting (Root Cause Analysis). By no later than forty-five (45) days following the end of a malfunction incident at the Danville, Illinois Soybean Plant, Bunge Milling shall prepare a report to be kept at its Danville, Illinois facility that sets forth the following:

- a. The date and time that the malfunction incident started and ended. To the extent that the malfunction incident involved multiple releases either within a 24-hour period or within subsequent, contiguous, non-overlapping 24-hour periods, Bunge Milling will set forth the starting and ending dates and times of each release;

- b. An estimate of the quantity of VOCs/HAPs that was emitted and the calculations that were used to determine that quantity;
- c. The steps, if any, that Bunge Milling took to limit the duration and/or quantity of VOCs/HAPs emissions associated with the malfunction incident; and
- d. A detailed analysis that sets forth the Root Cause and all contributing causes of that malfunction incident, to the extent determinable.

Corrective Action. In response to any malfunction incident occurring after the entry of the Consent Decree, Bunge Milling shall take, as expeditiously as practicable, such interim and/or long-term corrective actions, if any, as are consistent with the general provisions above and good engineering practice to minimize the likelihood of a recurrence of the Root Cause and all contributing causes of that malfunction incident.

Nothing in this CTP will be construed to limit the right of Bunge Milling to take such corrective actions as it deems necessary and appropriate immediately following a malfunction incident or in the period during preparation of any reports required under this CTP.