

# Toxic Substance Reduction Plan

## Formaldehyde

Plan Date: December 21, 2012

**BASIC FACILITY INFORMATION:**

<b>Name and CAS # of Substance</b>	Formaldehyde CAS: 50-00-0	
<b>Substances for which other plans have been prepared:</b>	Methanol	
<b>Facility Identification and Site Address</b>		
<b>Company Name</b>	Panolam Industries Ltd.	
<b>Facility Name</b>	Huntsville Facility	
<b>Facility Address</b>	<b>Physical Address</b>	<b>Mailing Address: (if different)</b>
	<b>61 Domtar Road Huntsville, ON P1H 2J7</b>	Muskoka Road 3 Box 7500 Huntsville, ON P1H, 2 J7
<b>Spatial Coordinates</b>	<b>Zone 17T Easting: 632470 Northing: 5016877</b>	
<b>Number of Employees:</b>	<b>120</b>	
<b>NPRI ID</b>	<b>001199</b>	
<b>Ontario MOE ID Number</b>	<b>5971</b>	
<b>Parent Company Information</b>		
<b>Name and Address</b>	<b>Panolam Industries International Inc.</b>	
<b>Percent Ownership</b>	<b>100</b>	
<b>Business Number</b>	<b>893780742</b>	
<b>Primary North American Industrial Classification System Code (NAICS)</b>		
<b>2 Digit NAICS Code</b>	<b>32</b>	
<b>4 Digit NAICS Code</b>	<b>3212</b>	
<b>6 Digit NAICS Code</b>	<b>321216</b>	
<b>Company Contact Information</b>		
<b>Facility Public Contact</b>	Jim Kennedy	Same Address as facility
	Jim_Kennedy @panolam.com	
	Phone: (705) 789-9683	
	FAX: (705)789-6270	
<b>Parent Company Contact Information</b>		
<b>Parent Company Contact</b>	Jeffrey O'Hearn	Same Address as Parent Company
	Jeffrey_ohearn@panolam.com	
	Phone: (203) 925-1556	
	FAC: (203) 225-0050	

**PLAN SUMMARY STATEMENT:**

This plan accurately reflects the content of the toxic substance reduction plan for Formaldehyde, prepared by Panolam Industries, Ltd.

**STATEMENT OF INTENT:**

Panolam prides itself on being an environmentally proactive company. The facility will strive to reduce the usage, creation and emission of formaldehyde from the facility. A technical and economic feasibility analysis has been conducted to determine the options available for implementation.

**REDUCTION OBJECTIVES:**

Panolam intends to reduce the use of formaldehyde by 2.3% and the creation by 16% over the next 5 years.

**DESCRIPTION OF SUBSTANCE:**

Formaldehyde:           Used in the production of melamine formaldehyde resin at the facility.

                                  Present as an active ingredient in resins used to produce particleboard at the facility

                                  Present as an active ingredient in the resins used to treat papers that are later laminated to particleboard or MDF panels at the facility

                                  Generated in the drying and pressing of wood fibers to produce particleboard at the facility:

Over the past several years the facility has made a significant effort to reduce the level of formaldehyde in its finished products. In our standard particleboard this reduction is greater than 70% and for some of our products greater than 95%. The facility also continues to investigate other options for the production of its panels to further reduce the use of formaldehyde.

**TOXIC SUBSTANCE REDUCTION OPTION(S) TO BE IMPLEMENTED:**

**Option 4 - Reformulation PB Manufacturing Process**

	Used (Tonnes/yr)	Created (tonnes/year)	Contained in Prod (tonnes/yr)	On-Site Releases			Disposal (tonnes/yr)		Transfer Off Site for Recycling
				Air	Water	Land	On- Site	Off- Site	
Baseline	368352	8397	7085	9502	0	0	0	364	0
New	368352	7064	7085	8169	0	0	0	364	0
Reduction %	0	1333	0	1333	0	0	0	0	0
Reduction	0.0%	15.9%	NA	14.0%	NA	NA	NA	0.0%	NA

**Objective:**

To meet the California CARB composite wood panel emission standards, a better reaction of the resin was required. Urea-formaldehyde scavengers were also replaced by urea solution to further reduce the formaldehyde emissions. While most of this work was implemented prior to 2011, as the CARB Phase 2 limits became effective on January 1, 2011, the facility did not have any information on the effect that the changes would have on the air emissions. In 2012 stack testing was conducted that will be included in the 2012 emission reporting and TRA update. This item is complete

**Option 11 - Improved Inventory Control Treating operation**

	Used (Tonnes/yr)	Created (tonnes/year)	Contained in Prod (tonnes/yr)	On-Site Releases			Disposal (tonnes/yr)		Transfer Off Site for Recycling
				Air	Water	Land	On- Site	Off- Site	
Baseline	368352	8397	7085	9502	0	0	0	364	0
New	362994	8397	7085	9474	0	0	0	359	0
Reduction %	5358	0	0	28	0	0	0	5	0
Reduction	1.5%	0.0%	NA	0.3%	NA	NA	NA	1.4%	NA

**Objective:**

For the Paper Treating operation, improved inventory management is expected to result in a reduction in the amount of treated paper that is disposed of for exceeding its shelf life. Product overruns will be reduced to keep inventory to acceptable levels. The facility has estimated a 1.5% reduction in the amount of paper treated can be achieved.

The facility has conducted the initial training and implemented the initial scheduling changes in 2012. In early 2013, the results of these initial changes will be reviewed by management and if warranted additional training and scheduling modification may be implemented.

The facility is expecting to meet its reduction goals within 3 years.

**Estimated Reductions:**

**Option 12 - Improved Efficiency/Reduced scrap**

	Used (Tonnes/yr)	Created (tonnes/year)	Contained in Prod (tonnes/yr)	On-Site Releases			Disposal (tonnes/yr)		Transfer Off Site for Recycling
				Air	Water	Land	On- Site	Off- Site	
Baseline	368352	8397	7085	9502	0	0	0	364	0
New	365379	8389	7085	9411	0	0	0	361	0
Reduction %	2973	8	0	91	0	0	0	3	0
Reduction	0.8%	0.1%	NA	1.0%	NA	NA	NA	0.8%	NA

**Objective:**

Reduce the scrap rate on the particleboard lines by 50% from 2011 levels through the use of updated operator training and scheduling which will reduce the amount of resin required to produce a similar quantity of board. Improved scheduling will reduce the number of product changeovers reducing the quantity of scrap. The overall scrap rate for 2011 was 1.98 % so a goal of 0.99% will be proposed.

Reduce the scrap rate on the treater lines by 50% from 2011 levels through the use of updated operator training and scheduling which will reduce the amount of resin required to produce a similar quantity of treated paper. Improved scheduling will reduce the number of product changeovers reducing the quantity of scrap. This will reduce the amount of formaldehyde required to produce the melamine resin therefore reducing the methanol brought on-site and also reduce the amount of UF resin required. The overall scrap rate for the treaters in 2011 was 1.6%, so a goal of 0.8% has been proposed.

Reduce the scrap rate on the TFM lines from 2011 levels through the use of updated operator training and scheduling which will reduce the amount of board required and therefore reduce the amount of PB resin required. Improved scheduling will reduce the number of product changeovers reducing the quantity of scrap. The 2011 scrap rate was 4.97% so a goal of 2.5% is proposed.

The initial operator training was completed in 2012 and included brainstorming sessions to determine ways to reduce scrap and modify the process. The facility also implemented daily monitoring of scrap generation during the daily management meeting. After a thorough review of the production scheduling process, modifications were implemented in 2012 that allow for longer runs of product which reduces scrap produced primarily during start-up and shutdowns and grade changes. In early 2013 the results of the 2012 modifications will be reviewed by management and at that point additional training and or scheduling modifications may be implemented.

These scrap reduction activities are expected to achieve the goals within the next 3 years.

## **PLANNER RECOMMENDATIONS**

Based on **Church & Trought Inc.** (CTI's) review of the Panolam Industries Ltd.'s Huntsville facility *Toxic Substance Reduction* (TSR) Plan for formaldehyde, the following recommendations are submitted for consideration:

### **Expertise Relied on in Preparing the Plan**

The TSR Plan was prepared by Jeff O'Hearn, Corporate Environmental Engineer for Panolam Industries International Inc. Mr. O'Hearn also relied on input from representatives at the facility. The technical process and accounting expertise used in preparing the plan appears to be appropriate to the requirements of *O. Reg 455/09* and no additional recommendations are noted in this regard.

### **Identification and Description of Stages and Processes**

The Panolam Huntsville TSR Plan for formaldehyde provided a detailed summary of the processes of the operations at the subject facility, including the process flow of the target substances. Based on CTI's review of the TSR Plan document, the processes at the subject facility appear to have been identified and described with a level of detail that is sufficient for the reviewers of the TSR plan to understand the following:

- The purpose and particulars of the toxic substances that are used
- The reason the toxic substances are required
- The nature of inputs that contain the toxic substances
- The locations in which the toxic substances that are used
- The times at which the toxic substances that are used
- The end points/fates of the toxic substances

It is noted that, while the processes are well defined and described, the initial breakdown to stages is defined as a single one. It is understood that, based on the flow of materials, this is considered to be the best available approach. Based on CTI's review of this component of the TSR Report, no other recommendations are noted in this regard.

### **Process Flow Diagrams**

The Panolam Huntsville TSR Plan provided process flow diagrams for the target substance throughout the facility operations. Based on CTI's review of the TSR Plan document, the process flow diagrams provided in the TSR report have a sufficient level of detail to illustrate the individual steps of the process as well as their relationship to each other. Therefore, no additional recommendations are noted in this regard.

## **Data and Methods Used in Toxic Substance Accounting**

The Panolam Huntsville TSR Plan used data sources for the target substance that appeared to be in accordance with industry standard practices, including direct measurement and/or laboratory analysis, as well as process engineering estimates. The methodology produced results that were representative of the input/output quantities of toxic substances used at a sufficient balance of cost-effectiveness and accuracy for the TSR reporting, and it did not appear that significant gains in the accuracy of the results could be obtained by replacing any of the estimates with additional measurements and/or laboratory analysis. Therefore, no additional recommendations are submitted in this regard.

## **Analysis of Input/Output Balances**

The Panolam Huntsville TSR Plan quantified the input/output balances using methodology that was consistent with the level of accuracy needed for assessing toxics reduction options, and no significant data gaps were encountered. Based on CTI's review of the TSR Plan document, the process flow diagrams provided in the TSR report have a sufficient level of detail to illustrate the individual stages of the process as well as their relationship to each other. It is noted that the Input/Output Balances are shown simply as 'In + Created' = 'Out + Destruction/Transformed'. It would be ideal to show each specific input and output, such as 'U4 + U5 = A13 + A14 +DIS5' etc. This is not a necessity, but would facilitate future review. Otherwise, no additional recommendations are noted in this regard.

## **Direct and Indirect Cost Analysis**

The Panolam Huntsville TSR Plan provided an analysis of direct and indirect costs for the reduction of the target toxic substances. Based on CTI's review of the TSR Plan document, the cost analysis and allocations provided in the TSR report have a sufficient level of detail for the purposes of the TSR Plan. Therefore, no additional recommendations are submitted in this regard.

## **Identified Options**

The Panolam Huntsville TSR Plan provided a summary of the toxics reduction options, along with a description of the effects of implementing the options on production resources, facility configuration and equipment, and final product quality. Based on CTI's review of the TSR Plan document, the identified toxics reduction options in the



report have a sufficient level of analysis to determine economic feasibility. Therefore, no additional recommendations are noted in this regard.

### **Reduction Estimates for Each Option**

The Panolam Huntsville TSR Plan provided reduction estimates for the target toxic substance, which were based on calculations from process inputs after the implementation of the toxics reduction options. Based on CTI's review of the TSR Plan document, the reduction estimates appear to be conservatively based on the best available information, and no additional recommendations are noted in this regard.

### **Technical and Economic Feasibility Analysis**

The Panolam Huntsville TSR Plan provided a feasibility analysis that summarized which toxics reductions options are first technically feasible, and once identified as such, which are also economically viable. A review of the analysis noted that the criteria used appeared to represent the best available information and estimates, and incorporated all reasonable assumptions of additional expenses and cost savings. Therefore, no additional recommendations are noted in this regard.

### **Additional Feasible Reduction Options**

Based on our review of the Panolam Huntsville TSR Plan, CTI does not presently have any knowledge of any additional technically and economically feasible options that would result in reductions that are equal to or greater than those already identified in the plan. Therefore, no additional recommendations are noted in this regard.

### **Implementation Steps, Timelines, and Achievability**

The Panolam Huntsville TSR Plan provided an outline of the implementation steps with sufficient detail to predict the project timeline and ensure effective implementation. It is noted that Options 11 and 12 will require management input and review at some point in the implementation. It may help to try and break down the timing of steps such as this, and on what basis decision for proceeding will be made. Otherwise, no additional recommendations are noted in this regard.

**COPY OF CERTIFICATIONS:**

**CERTIFICATION BY HIGHEST RANKING EMPLOYEE**

As of December 21, 2012 I, Jim Kennedy, certify that I have read the toxic substance reduction plan for the toxic substance referenced below and am familiar with its contents, and to my knowledge the plan is factually accurate and complies with the Toxics Reduction Act, 2009 and Ontario Regulation 455/09 (general) made under that Act.

Toxic Substance: Formaldehyde



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Jim Kennedy  
HR Manager/Acting Plant Manager  
Panolam Industries Ltd.

**CERTIFICATION BY LICENSED PLANNER:**

As of December 21, 2012, I, Ulla Jokinen of Church & Trought Inc., certify that I am familiar with the processes at the Panolam Industries Ltd Huntsville facility, that uses or creates the toxic substance referred to below, that I agree with the estimates referred to in subparagraphs 7.iii, iv. And v of subsection 4(1) of the Toxics Reduction Act, 2009 that are set out in the plan dated December 21, 2012 and that the plan complies with the Act and Ontario Regulation 455/09 (General) made under the Act.

Toxic Substance: Formaldehyde



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Ulla Jokinen, B.Sc., C.E.T. of Church & Trought Inc.  
Toxic Substance Reduction Planner  
Planner License No: TSRP0090