

# Plan Summary Preview

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## Company Details

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Company Legal Name:

Air Products Canada Ltd.

Company Address:

989 Derry Road, Mississauga (Ontario)

## Report Details

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Facility:

Corunna Hydrogen Facility

Facility Address:

150 St. Clair Parkway Parkway, Corunna (Ontario)

Update Comments:

## Activities

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### Select the Facility Contacts

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#### Contacts

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Public Contact:\*

Bryan Jacques

Highest Ranking Employee:

Bryan Jacques

Person responsible for Toxic Substance Reduction Plan preparation:

Wasef Jamil

## Organization Validation

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### Company and Parent Company Information

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#### Company Details

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Company Legal Name:\*

Air Products Canada Ltd.

Company Trade Name:\*

Air Products Canada Ltd

Business Number:\*

**Mailing Address**

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Delivery Mode:

PO Box or Rural Route Number:

Address Line 1:

City:

Province/Territory:

Postal Code:

**Physical Address**

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Address Line 1:

City:

Province/Territory:

Postal Code:

Additional Information:

Land Survey Description:

National Topographical Description:

**Parent Companies**

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**Air Products Canada Ltd**

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Company Legal Name:\*

Percentage owned:\*

Business Number:\*

**Mailing Address**

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Delivery Mode:

PO Box or Rural Route Number:

Address Line 1:

City:

Province/Territory:

Postal Code:

Physical Address

Address Line 1:

City:

Province/Territory:

Postal Code:

Additional Information:

Land Survey Description:

National Topographical Description:

Air Products and Chemicals, Inc.

Company Legal Name:\*

Percentage owned:\*

Business Number:\*

Mailing Address

Delivery Mode:

PO Box or Rural Route Number:

Address Line 1:

City:

Province/Territory:

Postal Code:

Physical Address

Address Line 1:

City:	<input type="text" value="Allentown"/>
Province/Territory:	<input type="text" value="Pennsylvania"/>
Postal Code:	<input type="text" value="18195"/>
Additional Information:	<input type="text"/>
Land Survey Description:	<input type="text"/>
National Topographical Description:	<input type="text"/>

**AIR PRODUCTS CANADA**

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Company Legal Name:*	<input type="text" value="AIR PRODUCTS CANADA"/>
Percentage owned:*	<input type="text" value="50.00"/>
Business Number:*	<input type="text" value="877788000"/>

**Mailing Address**

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Delivery Mode:	<input type="text"/>
PO Box or Rural Route Number:	<input type="text"/>
Address Line 1:	<input type="text" value="7201 Hamilton Boulevard"/>
City:	<input type="text" value="Allentown"/>
Province/Territory:	<input type="text" value="Pennsylvania"/>
Postal Code:	<input type="text" value="18195"/>

**Physical Address**

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Address Line 1:	<input type="text" value="7201 Hamilton"/>
City:	<input type="text" value="Allentown"/>
Province/Territory:	<input type="text" value="Pennsylvania"/>
Postal Code:	<input type="text" value="18195-1501"/>
Additional Information:	<input type="text"/>
Land Survey Description:	<input type="text"/>

National Topographical Description:

## Facility Validation

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### Facility Information

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Facility:*	<input type="text" value="Corunna Hydrogen Facility"/>
NAICS Id:*	<input type="text" value="325120"/>
NPRI Id:*	<input type="text" value="11489"/>
ON Reg 127/01 Id:	<input type="text"/>

### Mailing Address

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Delivery Mode:	<input type="text" value="Post Office Box"/>
PO Box or Rural Route Number:	<input type="text" value="608"/>
Address Line 1:	<input type="text" value="150 St. Clair Parkway"/>
City:	<input type="text" value="Corunna"/>
Province/Territory:	<input type="text" value="Ontario"/>
Postal Code:	<input type="text" value="N0N1G0"/>

### Physical Address

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Address Line 1:	<input type="text" value="150 St. Clair Parkway Parkway"/>
City:	<input type="text" value="Corunna"/>
Province/Territory:	<input type="text" value="Ontario"/>
Postal Code:	<input type="text" value="N0N1G0"/>
UTM Zone:	<input type="text" value="17"/>
UTM Easting:	<input type="text" value="381776"/>
UTM Northing:	<input type="text" value="4750852"/>
Latitude:	<input type="text" value="42.90110"/>
Longitude:	<input type="text" value="-82.44610"/>

Additional Information:

Land Survey Description:

National Topographical Description:

## Contact Validation

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### Contacts

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#### Public Contact:

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First Name:\*

Last Name:\*

Position:\*

Telephone:\*

Ext:

Fax:

Email:\*

#### Mailing Address

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Delivery Mode:

PO Box or Rural Route Number:

Address Line 1:

City:

Province/Territory:

Postal Code:

#### Highest Ranking Employee:

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First Name:\*

Last Name:\*

Position:\*

Telephone:\* 5198624243  
Ext:   
Fax: 5198624673  
Email:\* jacqueb@airproducts.com

Mailing Address

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Delivery Mode: Post Office Box  
PO Box or Rural Route Number: 608  
Address Line 1: 150 St. Clair Parkway Parkway  
City: Corunna  
Province/Territory: Ontario  
Postal Code: N0N1G0

Person responsible for the Toxic Substance Reduction Plan preparation:

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First Name:\* Wasef  
Last Name:\* Jamil  
Position:\* Environmental Engineer  
Telephone:\* 6472021755  
Ext:   
Fax:   
Email:\* wasef.jamil@urs.com

Mailing Address

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Delivery Mode:   
PO Box or Rural Route Number:   
Address Line 1: 30 Leek Crescent  
City: Richmond Hill

Province/Territory:

Ontario

Postal Code:

L4B 4N4

## Employees

### Employees

Number of Full-time Employees:\*

10

## Substances

### 67-56-1, Methanol

67-56-1, Methanol

### Substances Section Data

#### Statement of Intent

##### Use

Is there a statement that the owner or operator of the facility intends to reduce the use of the toxic substance at the facility?:\*

No

If 'yes', exact statement of the intent that is included in the facility's TRA Plan to reduce the use of the toxic substance at the facility:\*\*

If 'no', reason in the facility's TRA Plan for no intent to reduce the use of the toxic substance at the facility:\*\*

Methanol is not used at the Facility

##### Creation

Is there a statement that the owner or operator of the facility intends to reduce the creation of the toxic substance at the facility?:\*

No

If 'yes', exact statement of the intent that is included in the facility's TRA Plan to reduce the creation of the toxic substance at the facility:\*\*

If 'no', reason in the facility's TRA Plan for no intent to reduce the creation of the toxic substance at the facility:\*\*



APC is committed to playing a leadership role in environmental sustainability and its stewardship. Methanol is currently produced as a by-product by APC during the manufacturing of hydrogen using the SMR process. APC currently closely monitors and evaluates the performance of the manufacturing process. Since, the Facility does not intentionally create methanol, this plan will not address reducing its creation. As part of the responsibilities towards the better of the environment and the society, given the current process conditions APC intends to monitor the SMR process to optimize the efficiency of the system in order to find possible means for reducing the creation of methanol while being in compliant with the applicable Federal and Provincial Regulations

**Objectives, Targets and Description**

**Objectives**

Objectives in plan:\*

APC intends to monitor new methods and investigate emerging technologies to reduce or eliminate the creation of methanol. At this time, no reduction objective has been set; but APC will closely evaluate the production process in order to reduce the creation of methanol at the Facility.

**Use Targets**

What is the targeted reduction in use of the toxic substance at the facility?\*

		Quantity	Unit
<input checked="" type="checkbox"/>	No quantity target	or	
		<input type="text"/>	<input type="text"/>

What is the targeted timeframe for this reduction?\*

No timeline target or  years

Description of targets:

**Creation Targets**

What is the targeted reduction in creation of the toxic substance at the facility?\*

		Quantity	Unit
<input checked="" type="checkbox"/>	No quantity target	or	
		<input type="text"/>	<input type="text"/>

What is the targeted timeframe for this reduction?\*

No timeline target or  years

Description of targets:

Reasons for Use

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Why is the toxic substance used at the facility?:\*

This substance is not used at the facility

Summarize why the toxic substance is used at the facility:\*\*

Reasons for Creation

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Why is the toxic substance created at the facility?:\*

As a by-product

Summarize why the toxic substance is created at the facility:\*\*

Methanol is produced at the HTS reactor where the water gas shift reaction occurs. Methanol is produced from a reaction between hydrogen and carbon monoxide, one of the impurities in the syngas stream.

Toxic Reduction Options for Implementation

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Description of the toxic reduction option(s) to be implemented:

Is there a statement that no option will be implemented?:\*

Yes

If you answered "No" to this question, please add the option(s) under the appropriate Toxic Substance Reduction Categories (e.g. Materials or feedstock substitution, Product design or reformulation, etc.). If you answered "Yes" please provide an explanation below why your facility is not implementing an option.

Explanation of the reasons why no option will be implemented:\*\*

Methanol is created as a by-product in the HTS reactor where the water gas shift reaction occurs. Methanol is produced from a reaction between hydrogen and carbon monoxide, one of the impurities in the syngas stream. The Toxic Substance Reduction Plan addressed the MOE prescribed option categories which included materials or feedstock substitution, product design or reformulation, equipment or process modification, spill or leak prevention, on-site re-use, recycling or recovery, improved inventory management or purchasing techniques and good operator practice or training. None of the options were beneficial for the Facility at this particular time and the review did not identify any reduction option for the creation of methanol at the Facility. As part of their perceived social and environmental responsibilities, given the current process conditions APC intends to monitor the SMR process to optimize the efficiency of the system in order to find possible means for reducing the creation of methanol while being in compliant with the applicable Federal and Provincial Regulations.

Materials or feedstock substitution

Product design or reformulation

Equipment or process modifications

Spill or leak prevention

On-site reuse, recycling or recovery

Improved inventory management or purchasing techniques

Good operator practice or training

Rationale for why the listed options were chosen for implementation:

General description of any actions undertaken by the owner and operator of the facility to reduce the use and creation of the toxic substance at the facility that are outside of the plan:

License Number of the toxic substance reduction planner who made recommendations in the toxic substance reduction plan for this substance (format TSRPXXXX):\*

License Number of the toxic substance reduction planner who has certified the toxic substance reduction plan for this substance (format TSRPXXXX):\*

What version of the plan is this summary based on?:\*

## NA - 19, Hexavalent chromium (and its compounds)

NA - 19, Hexavalent chromium (and its compounds)

### Substances Section Data

#### Statement of Intent

##### Use

Is there a statement that the owner or operator of the facility intends to reduce the use of the toxic substance at the facility?:\*

If 'yes', exact statement of the intent that is included in the facility's TRA Plan to reduce the use of the toxic substance at the facility:\*\*

If 'no', reason in the facility's TRA Plan for no intent to reduce the use of the toxic substance at the facility:\*\*

##### Creation

Is there a statement that the owner or operator of the facility intends to reduce the creation of the toxic substance at the facility?:\*

If 'yes', exact statement of the intent that is included in the facility's TRA Plan to reduce the creation of the toxic substance at the facility:\*\*

If 'no', reason in the facility's TRA Plan for no intent to reduce the creation of the toxic substance at the facility:\*\*

**Objectives, Targets and Description**

**Objectives**

Objectives in plan:\*

**Use Targets**

What is the targeted reduction in use of the toxic substance at the facility?\*

	Quantity	Unit
<input checked="" type="checkbox"/> No quantity target	or <input type="text"/>	<input type="text"/>

What is the targeted timeframe for this reduction?\*

No timeline target or  years

Description of targets:

**Creation Targets**

What is the targeted reduction in creation of the toxic substance at the facility?\*

	Quantity	Unit
<input checked="" type="checkbox"/> No quantity target	or <input type="text"/>	<input type="text"/>

What is the targeted timeframe for this reduction?\*

No timeline target or  years

Description of targets:

Reasons for Use

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Why is the toxic substance used at the facility?:\*

As a physical or chemical processing aid

Summarize why the toxic substance is used at the facility:\*\*

Hexavalent Chromium (Cr(VI)) is a residual constituent in the High-Temperature Shift Catalysts, Katalco 71-5M and Katalco 71-6M. Cr(VI) acts as a structural promoter, reducing the thermal sintering of iron oxide, a constituent of the catalysts, from Haematite (Fe<sub>2</sub>O<sub>3</sub>) to Magnetite (Fe<sub>3</sub>O<sub>4</sub>) form without appreciably changing the specific activity of the HTS catalyst. This reduction of iron oxide is required for the successful operation of the HTS catalyst over the life cycle.

Reasons for Creation

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Why is the toxic substance created at the facility?:\*

This substance is not created at the facility

Summarize why the toxic substance is created at the facility:\*\*

Toxic Reduction Options for Implementation

---

Description of the toxic reduction option(s) to be implemented:

Is there a statement that no option will be implemented?:\*

Yes

If you answered "No" to this question, please add the option(s) under the appropriate Toxic Substance Reduction Categories (e.g. Materials or feedstock substitution, Product design or reformulation, etc.). If you answered "Yes" please provide an explanation below why your facility is not implementing an option.

Explanation of the reasons why no option will be implemented:\*\*

There are three options that are identified in this TSRP for the potential reduction of Cr(VI) use at the Facility - Material Substitution (Future), Process Modification (Future), Inventory/Purchasing. Potential reductions were estimated based on each of the three reductions. All the three identified options are very Facility-specific and are meant for future purposes when the life of the catalysts is closer to their maturity date or when scheduled for replacement during maintenance outage, i.e. in the next 5 to 6 years. Hence, the technical analyses are Facility-specific as well and are beyond the expertise of the Planner at this particular time. These analyses can be undertaken by APC's process engineers, the facility manager and the catalysts suppliers during the half-yearly meetings when catalysts performances are monitored and evaluated closer to their replacement cycles.

Materials or feedstock substitution

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Product design or reformulation

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Equipment or process modifications

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Spill or leak prevention

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On-site reuse, recycling or recovery

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Improved inventory management or purchasing techniques

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Good operator practice or training

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Rationale for why the listed options were chosen for implementation:

General description of any actions undertaken by the owner and operator of the facility to reduce the use and creation of the toxic substance at the facility that are outside of the plan:

Manufacturing hydrogen using the SMR process is one of the core businesses of APC. Within APC Corporation there are designated internal teams comprising of personnel with background and expertise in material and process engineering. These teams spend exhaustive efforts to strive for the most efficient possible means to produce hydrogen for their customers using the SMR process. They work closely with the chemicals suppliers to obtain the best possible raw materials and catalysts present in the existing market for manufacturing hydrogen in the best possible way. Management of the Corunna Facility is built upon a similar culture, where APC's process engineers, facility manager and the catalysts suppliers meet every half-year, to monitor and evaluate the performance of the catalysts to best estimate the efficiency of the SMR process. During these meetings, detailed attention is paid to the existing condition of the catalysts that are in the reactors, estimate the remaining life of the existing catalysts and finally evaluating the suitability of any alternatives catalysts that are currently available in the market that would help maintain and achieve a better efficient manufacturing process. All these evaluations and decisions are made while ensuring compliance with the Federal and Provincial regulatory requirements.

License Number of the toxic substance reduction planner who made recommendations in the toxic substance reduction plan for this substance (format TSRPXXXX):\*

License Number of the toxic substance reduction planner who has certified the toxic substance reduction plan for this substance (format TSRPXXXX):\*

What version of the plan is this summary based on?:\*