

Appendix J
**Facility Profile, NB Department of Environment
and Local Government, 2012**

FACILITY PROFILE

CertainTeed Gypsum Canada, Inc.

MCADAM GYPSUM WALLBOARD PLANT

**Prepared by:
Impact Management Branch
Department of Environment & Local Government**

September 2012

TABLE OF CONTENTS

BACKGROUND

PROCESS DESCRIPTION

General Overview
Gypsum Wallboard Production
Emissions of Process Gases

POTENTIAL AIR QUALITY IMPACTS

Sulphur Dioxide
Nitrogen Oxides
Particulate Matter
Carbon Dioxide
Odour

AIR QUALITY COMPLIANCE

Current Air Quality Approval to Operate Terms and Conditions and Compliance History
Enforcement

PUBLIC OUTREACH

CONTACT INFORMATION

BACKGROUND

CertainTeed Gypsum Canada, Inc. operates a gypsum wallboard plant in McAdam, New Brunswick. This plant has been in operation, under several different ownerships, since 1991. The plant has an annual production capacity of 23 million square metres of gypsum wallboard.

The plant transforms gypsum rock to wallboard in a process of grinding and drying the rock, calcination, extruding and forming into boards and then drying.

As required under the *Air Quality Regulation – Clean Air Act*, CertainTeed Gypsum Canada Inc, Gypsum Wallboard Plant is considered a source and therefore, must apply for an Air Quality Approval to Operate from the New Brunswick Department of Environment and Local Government. The facility is required to conduct its operations according to conditions outlined in the Air Quality Approval aimed at preventing unfavorable air quality conditions. Conditions of approvals can be wide-ranging and may, in some cases, include requirements such as:

- limitations on operational parameters;
- requirements for testing and monitoring of emissions from specific unit operations;
- requirements for testing and monitoring of the ambient air quality surrounding the facility;
- requirements to operate air pollution control equipment;
- limits on emissions that are approved to be released to the atmosphere;
- provisions for equipment upgrade and/or maintenance;
- requirements for environmental emergency and/or compliance reporting; and
- other conditions aimed at minimizing the facility's impact on the environment.

The Regulation provides for approvals to be issued by the Minister of Environment & Local Government for a specified period, not to exceed five years.

The CertainTeed Gypsum Canada, Inc. Gypsum Wallboard Plant's Approval to Operate (identified as I-6085) issued under the *Air Quality Regulation* expires on March 31st, 2013.

This document is intended to provide: background information on CertainTeed Gypsum Canada, Inc. Gypsum Wallboard and the Air Quality Approvals process; a description of the CertainTeed Gypsum Canada, Inc. Gypsum Wallboard process; a list of the potential air quality impacts associated with the facility; and a review of the Facility's compliance with its existing Air Quality Approval to Operate.

PROCESS DESCRIPTION

General Overview

GYPSUM ROCK STOCKPILE SHELTERS

The area where the Gypsum Rock, which is the plant feed rock, is stored prior to transportation to the Primary Crusher. In 2012 two tarpaulin fabric covered, steel spanned dome buildings were constructed to improve storage conditions. Each dome building currently has two walls, with the other two open to the environment. The gypsum rock stockpile area is considered a potential source of fugitive particulate matter.

PRIMARY CRUSHER

The primary crusher is used to crush the feed rock to a reduced size less than 3.8 cm (1.5 in) in diameter. The primary crusher is considered a potential source of fugitive particulate matter.

ROCK DRYER

The rock dryer is a rotary kiln dryer unit used to evaporate excess free moisture from the rock. The kiln utilizes No. 6 Fuel Oil as the fuel source.

CALCINE MILL

The calcine mill is where dried gypsum from the Rock Dryer is fed for further size reduction to 94.2% passing 100-mesh screens, and then calcined to stucco in a Calcine Mill utilizing No. 6 Fuel Oil.

Gypsum Wallboard Production

WALLBOARD FABRICATION LINE

The wallboard fabrication line is situated after the stucco production in the Calcine Mill. All the dry and liquid ingredients are added, mixed, and placed between sheets of paper; the wallboard is extruded to the desired form and set before it is fed into a drying oven. The drying oven has ten levels and two zones. The initial zone operates at 245 to 288°C (473 to 550°F), while the second zone operates at 191°C (375°F). The initial zone drives off most of the moisture while the second zone permits continued drying. The board emerges from the ovens at about 0.5 % free moisture.

WASTE WALLBOARD STOCKPILE AREA

Waste wallboard generated from the process can be recycled and is stored onsite at the west end of the property. CertainTeed Gypsum Canada Inc. provides a service to its clients that removes waste wallboard from job sites and the waste that can be recycled is returned to the McAdam facility. The current process allows 35% recycled material. The waste stockpile has decreased in size significantly and future plans include managing the recycle wallboard by the rock shelter. This area is currently considered a potential source of fugitive particulate matter.

Emissions of Process Gases

There are 3 areas in the Facility that allow the release of process gas.

The rock dryer uses No 6. Fuel Oil and discharges process gas at a maximum rate of 492 m³/min from the exhaust stack that is 0.9 m (2.95 ft) in diameter and 21 m (69 ft) above adjacent ground level. The exhaust gas passes through a bag house filtration system before exiting the stack to reduce contaminants in the emissions.

The calcine mill burner utilizes No. 6 Fuel Oil and can discharge process gas at approximately 751 m³/min from the exhaust stack that is 0.9 m (2.95 ft) in diameter and 21 m (69 ft) above adjacent ground level. The calcine mill exhaust gas passes through a bag house filtration system before emission and the stack is equipped with a damper to redirect a portion of the gas to be recycled back into the calcination process. The combined combustion rate for the rotary dryer and the calcine mill is 15 litres per MSF.

The oven dryer utilizes No. 2 Fuel Oil at a rate of 35 litres per MSF and is equipped with two exhaust stacks, one for each zone, that are 1.22 m (4 ft) in diameter and 6.7 m (21.9 ft) above adjacent ground level. Each dryer discharges process gas at between 700 m³/min and 1300 m³/min, depending on process operations.

POTENTIAL AIR QUALITY IMPACTS

The potential air quality impacts associated with the CertainTeed Gypsum Canada, Inc. Gypsum Wallboard Plant are related primarily to sulphur dioxide, nitrogen oxides, fine particulate matter and carbon monoxide emissions from the Facility's four (4) exhaust stacks. Fugitive particulate matter from the storage areas and crusher process is also a potential air quality impact.

An Air Quality Dispersion Modeling Report completed in October, 2006 demonstrated that the predicted ground-level concentrations of the sulphur dioxide, nitrogen oxides and carbon monoxide generated from the four (4) exhaust stacks were below their respective regulatory standards for all averaging periods. The maximum predicted ground-level concentration of fine particulate matter was slightly above the regulatory standard in a small area within the property limits.

Sulphur Dioxide

Sulphur dioxide is generated in combustion processes as a result of the burning of sulphur contained as an impurity in the fuel. Sulphur dioxide is a colorless, non-flammable, non-explosive gas that has a detectable odour and taste at higher concentrations. The heavier the fuel oil burned the higher the sulphur content. Sulphur oxides can combine with water to form acid mists and droplets.

Nitrogen Oxides

Nitrogen oxides are formed in any combustion process from nitrogen in the air (termed "thermal NOx") and from the nitrogen content of the fuel (termed "fuel NOx"). In almost every combustion process utilizing fossil fuels, thermal NOx is dominant since the nitrogen content of liquid fossil fuels is relatively low. Once emitted into the atmosphere, nitrogen oxides can combine with water vapour in the atmosphere to form wet nitrate, which may later be deposited at ground level and may contribute to acidification. Nitrogen oxides may also participate in a secondary chemical reaction with volatile organic compounds in the presence of sunlight to form ground-level ozone, the major component of photochemical smog. In general, most ground-level ozone experienced in New Brunswick originates from the long-range transport of pollutants from the eastern United States and central Canada.

Particulate Matter

Particulate matter forms in a combustion process from the incomplete combustion of fuel, as well as from various impurities that may be contained in the fuel such as trace metals (often collectively referred to as "ash"). Larger particles are significant mainly from a nuisance point of view, where "soot" may be deposited on neighbouring properties. However, fine particulate matter is causing increasing concern due to the potential adverse health effects of inhaling such particles.

Particulate matter is a concern for this plant due to the direct contact of the process gas with the product. Grinding, drying and the calcination process of gypsum gives potential to release gypsum particles into the environment. Baghouse filtration systems in the rock dryer and calcination mill reduce particulate matter emissions within these processes.

Carbon Dioxide

Carbon dioxide is a colourless, odourless, and tasteless gas and is a product of incomplete combustion of fossil fuels. In general, the more efficient the combustion process, the more carbon dioxide is produced per unit of heat input as most of the carbon in the fuel is being fully combusted.

Odour

Odourous substances that are emitted from industrial sources include both organic and inorganic gases and particulate. Many odourous compounds result from biological activity or are present in emissions from chemical processes. Odour can create an annoyance, which could lead to a loss of property enjoyment.

AIR QUALITY COMPLIANCE

CertainTeed Gypsum Canada, Inc., McAdam Gypsum Wallboard Plant is required to comply with the *Air Quality Regulation – Clean Air Act* and operate under terms and conditions established in its Approval to Operate, issued pursuant to Section 3 of the *Air Quality Regulation – Clean Air Act*. Conditions are aimed at ensuring that the facility environmental impact during its day-to-day operations does not adversely affect air quality in surrounding areas, as well as regionally and

globally. Any violations of the conditions of Approvals may be subject to compliance and enforcement measures as described in the Department of Environment & Local Government's Compliance and Enforcement Policy.

Current Air Quality Approval to Operate Terms and Conditions and Compliance History

The main conditions of the Approval I-6085 and compliance history over the life of the Approval are summarized in the paragraphs that follow:

- *Operate the Facility such that the Sulphur Dioxide (SO₂) emissions from the operation do not exceed 200 metric tonnes per year or 200 metric tonnes per year of Particulate Matter (PM);*

The Facility has been in full compliance with this Class 1 condition over the life of the current Air Quality Approval to Operate. The table that follows provides the historical results of the annual release of Sulphur Dioxide (SO₂) and Particulate Matter (PM) to the atmosphere from the Facility.

Year	Sulphur Dioxide tonnes per year	Particulate Matter tonnes per year
2011	61	5
2010	63	5
2009	68	5
2008	84	7
2007	165	13

Emissions have decreased over the years due to less board being produced, improved board formulations, and other emission and equipment efficiencies.

- *Conduct source testing prior to October 31, 2009 to determine the concentration in milligrams per cubic meter (mg/m³) and the emission rate in kilograms per hour (kg/h) of Sulphur Dioxide (SO₂), Carbon Monoxide (CO), Nitrogen Oxides (NO_x), and Particulate Matter (PM) being released from exhaust stacks of the Rock Dryer, Calcine Mill, and the two Dryer Ovens representing normal operating conditions.*

The Facility conducted the source testing in 2010. The results of the emissions were in compliance with the limits of Sulphur Dioxide and Particulate Matter set in their Approval to Operate. Process gas flow was slightly more than 3000 m³/min, requiring the Facility to remain a Class 1B Air Quality Approval.

- *Prepare and submit a Yearly Report containing: a summary of any incidents and information of any violations of the Approval, the consumption of fuel oil and its average sulphur content, the annual emission of sulphur dioxide from all combustion sources, a report of the source testing activities, and a report on the air quality dispersion modeling study.*

The Facility has been in compliance with this condition over the life of the current Approval to Operate.

Enforcement

Enforcement options used by the Department of Environment & Local Government are outlined in the Department's *Compliance and Enforcement Policy*. These may include but are not limited to: schedules of compliance, verbal and written warnings, orders, and prosecutions. Although not specifically outlined in the Policy, it is also possible to amend approvals with more stringent conditions, both during its valid period or at the time of renewal, to address specific compliance issues or to improve the environmental impact of the facility. Most recently, a new Regulation under the *Clean Air Act* allows for the issuance of "administrative penalties" for minor violations as an alternative to traditionally used enforcement options.

Since the formation of the Department of the Environment & Local Government in New Brunswick in 1973, there have been no official warnings or orders issued, nor have there been any prosecutions initiated by this agency during this period, related to air quality for this facility.

PUBLIC OUTREACH

CertainTeed Gypsum Canada, Inc. McAdam Gypsum Wallboard Plant indicates that its position on public outreach is to develop a positive community relationship by allowing an open-door policy, whereby any member of the public or interested party wishing to obtain further information about plant process may contact CertainTeed Gypsum Canada, Inc. McAdam Gypsum Wallboard Plant during regular business hours. Interested parties may also make arrangements with CertainTeed Gypsum Canada, Inc. for tours of the Facility.

CONTACT INFORMATION

For further information on the operation of CertainTeed Gypsum Canada Inc. McAdam Gypsum Wallboard Plant please contact:

Agata Sulkiewicz

Quality & Environment Manager
CertainTeed Gypsum Canada, Inc.
57 Quality Way
McAdam, New Brunswick
E6J 1B1
Telephone: (506) 784-1224
Fax: (506) 784-3204
E-mail: agata.sulkiewicz@saint-gobain.com

For further information on this document, or on environmental regulations relating to air quality, please contact:

Sheryl Johnstone, P. Eng.

Approvals Engineer
Impact Management Branch
New Brunswick Department of Environment & Local Government
PO Box 6000, 20 McGloin Street, Marysville Place
Fredericton, New Brunswick
E3B 5H1
Telephone: (506) 453-7945
Fax: (506) 453-2390
E-mail: sheryl.johnstone@gnb.ca

For comments or enquiries on the public participation process, please contact

Chandra Clowater

Coordinator
Stakeholder Education and Engagement Branch
New Brunswick Department of Environment & Local Government
PO Box 6000, 20 McGloin Street, Marysville Place
Fredericton, New Brunswick
E3B 5H1
Telephone: (506) 453-3700
Fax: (506) 453-3843
E-mail: chandra.clowater@gnb.ca