

Guide to calculations for ChemTRAC reporting: flour and dough production

Version 1.1

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Contents

How do I use this guide?

Part 1 of this guide will help you understand the ChemTRAC program, collect facility information, use the ChemTRAC calculator for flour and dough production facilities, and report substances to ChemTRAC, if needed.

Part 2 of this guide will help you reduce your facility's environmental impact.

The Appendices provide additional emission calculation information.

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City of Toronto, 2012

For more information about ChemTRAC, call 3-1-1 or visit www.toronto.ca/chemtrac

DISCLAIMER: This guide is for educational and informational purposes only. The City of Toronto assumes no liability for the accuracy or completeness of these materials. Readers are responsible for ensuring compliance with Toronto's Environmental Reporting and Disclosure Bylaw (Municipal Code Chapter 423). These materials should not be relied upon as a substitute for legal or professional advice. Readers should seek their own legal or professional advice in regard to their use of the information contained in the guide.

Introduction to the ChemTRAC program

There are chemicals in Toronto's environment that can harm our health. These substances come from vehicle exhaust, homes, businesses and other sources.

Toronto Public Health identifies 25 of these chemicals as "priority substances" because they are found in our local environment at levels that are of concern for health. Evidence links these substances to short-term health effects like respiratory problems, and longer-term impacts such as cancer. In a business setting, these substances can come from process heating, cleaning with solvents, welding and other processes.

The list of 25 substances and the reporting thresholds are included in Table 4 on page 34 of this guide.

ChemTRAC is a City of Toronto program that:

- tracks where businesses use and release these priority substances;
- helps businesses reduce or replace these substances with safer alternatives; and
- provides the public with information on priority substances in their community.

As part of ChemTRAC, Toronto's Environmental Reporting and Disclosure Bylaw (Municipal Code Chapter 423) requires many businesses to report to the City each year if they use or release a certain amount of priority substances to the environment. Flour and dough production facilities are covered by this bylaw. **Facilities primarily engaged in retailing to the general public are exempt from reporting to the ChemTRAC program.**

This guide is designed to help you and other flour and dough production facility owners:

- understand if your facility uses and releases any ChemTRAC priority substances;
- use ChemTRAC calculators to determine if you are required to report to the City of Toronto;
- use the ChemTRAC online reporting system to submit data to the City; and
- consider ways to reduce your environmental impact.

Additional information on the ChemTRAC program and the Environmental Reporting and Disclosure Bylaw is available by calling 3-1-1 or online at: <http://www.toronto.ca/chemtrac/>

The flour and dough production sector

The North American Industrial Classification System (NAICS) code 311822 includes establishments primarily engaged in manufacturing prepared flour mixes or dough from purchased flour. Establishments primarily engaged in grinding flour and preparing flour mixes or dough (311211, Flour Milling) are excluded. **Facilities that prepare products for immediate retail sale are exempt from ChemTRAC reporting.**

This guide uses the term “flour and dough production facilities” to refer to all facilities within the flour and dough production sector.

Flour and dough production facilities are required to report their data every year if they use or release any of the 25 substances above the reporting threshold. The report is due by June 30 each year. Annual data that is reported each June should cover the period from January 1 to December 31 of the previous year.

Identifying ChemTRAC substances in flour and dough production facilities

Figure 1 indicates typical steps taken in a flour and dough production facility to prepare products. Not all facilities will follow these steps exactly. However, most facilities will receive, store, convey, and mix dry ingredients and proof products (for products with yeast).

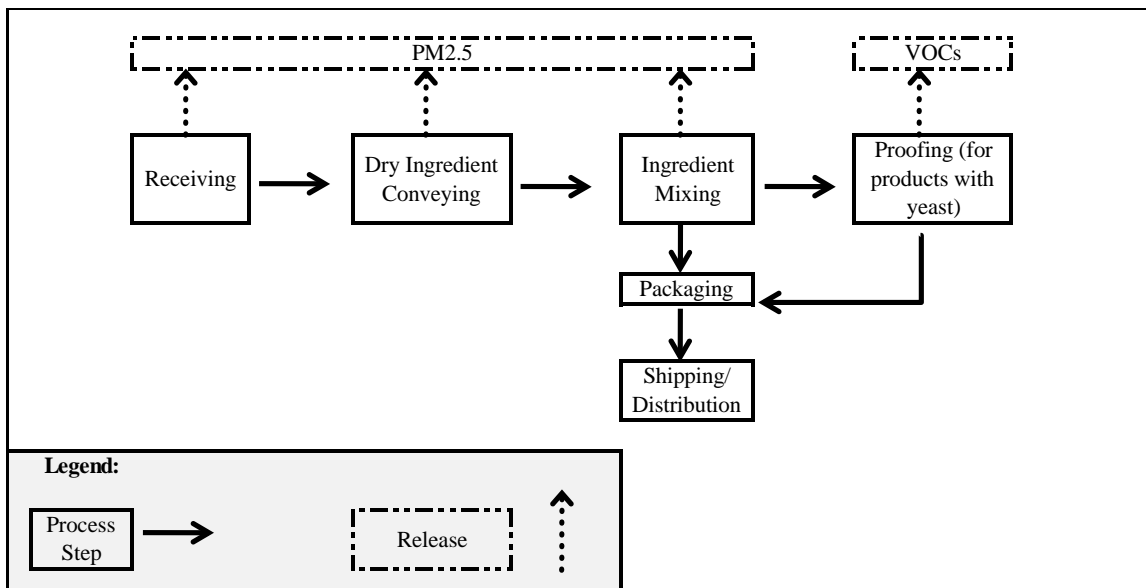


Figure 1. Typical steps taken in a flour and dough production facility to prepare products

Figure 1 also shows two ChemTRAC priority substances that are released in a typical flour and dough production facility. These are:

- Particulate Matter 2.5 (PM_{2.5})
- Volatile Organic Compounds (VOCs)

Particulate Matter 2.5 (PM_{2.5}). The term “particulate matter” describes solid and liquid particles found in the air we breathe. Particulate matter that is smaller than 0.0025 millimetres in diameter is called PM_{2.5} and may not be visible to the naked eye. In a flour and dough production facility, PM_{2.5} is released into the air during the receiving, storage and mixing of dry ingredients such as flour, sugar, salt or other powder.

Volatile Organic Substances (VOCs). VOCs are a group of organic chemicals that easily evaporate into the air. You can often smell them. They are created as a by-product of various activities and are released in small quantities when dough is proofed.

Table 1 lists the ChemTRAC substances that a typical flour and dough production facility would release. The ChemTRAC calculator can help you estimate the levels of these substances in your facility.

Part 1: Gathering data, using the calculator, and reporting to ChemTRAC

Table 1. ChemTRAC substances released in a typical flour and dough production facility, and their source of release

ChemTRAC priority substances	Flour and dough production steps	
	Dry ingredient receiving, storage and mixing <i>PM_{2.5} is released into the air from flour, sugar, salt or powders</i>	Proofing (for products with yeast) <i>VOCs are released in small quantities during the process</i>
PM _{2.5}	X	
VOCs		X

The health effects of PM_{2.5} and VOCs

PM_{2.5}. Because of their small size, PM_{2.5} can lodge deeply into the lungs. Numerous studies have linked PM to aggravated cardiac and respiratory diseases such as asthma, bronchitis and emphysema, and to heart disease.

VOCs. Short-term health effects of exposure to VOCs may include eye, nose, and throat irritation, headaches, loss of coordination, and nausea. Over longer periods, VOCs can damage the liver, kidneys, and central nervous system.

For more information on the health effects of these substances, as well as other ChemTRAC priority substances, visit

<http://www.toronto.ca/health/chemtrac/substances.htm>.

Calculating emissions

To help Toronto businesses calculate their emissions and comply with the Environmental Reporting and Disclosure Bylaw, Toronto Public Health developed calculators that are specific to industrial sectors and processes. Access these calculators from the ChemTRAC website at <http://www.toronto.ca/health/chemtrac/tools.htm>

These calculators help businesses do three things:

- Identify which ChemTRAC priority substances are used or released in their facility
- Calculate the amounts of ChemTRAC priority substances used or released
- Determine what they are required to report to the ChemTRAC program.

Appendix B describes how the calculators calculate estimates of the quantities of ChemTRAC priority substances that are released from your facility.

The release of ChemTRAC priority substances can be calculated using methods other than the ChemTRAC calculators. See <http://www.toronto.ca/health/chemtrac/tools.htm> for a list of alternative methods.

In the next section, we will work through worksheets that can help you use the ChemTRAC calculator for flour and dough production.

Worksheets for collecting information

The three worksheets found on the following pages are intended to help you collect all the information on processes at your facility that you will need in order to use the ChemTRAC calculator for flour and dough production.

Note: if your facility has sources of ChemTRAC priority substances other than the release of dry ingredient dust during the receiving, storage and mixing of dry ingredients and the release of VOCs during the proofing stage, you may need to use additional calculators to identify other emissions. You would then add these amounts to the numbers generated by the ChemTRAC calculator for flour and dough production. You can use ChemTRAC's "Calculation of Totals" calculator to combine the findings of multiple calculators and determine if you exceed ChemTRAC thresholds. See Appendix C for more details.

Printer friendly versions of the three worksheets can be found as Appendix A.

Part 1: Gathering data, using the calculator, and reporting to ChemTRAC

Worksheet 1 – Silos and hoppers (for receiving and storage only)

This worksheet will help you collect information on the receiving and storage of dry ingredients. You should collect data on your facility for the period from January 1 to December 31 of a calendar year.

1. What type and quantities of dry ingredients are received and stored in your facility?

You can fill out this section of the calculator for both dry ingredients stored in large silos or hoppers (Option 1A) and for dry ingredients stored in smaller quantities such as 20-kilogram bags (Option 1B). You can omit dry ingredients stored in very small quantities. You should enter information for each storage container holding dry ingredients.

One large and small storage container have been filled out as examples.

Option 1A. Storage of dry ingredients in large containers (silos, hoppers, etc.)				
Storage container identifier:	What is the container capacity?	Indicate the storage capacity units	What type of dry material is stored in this container?	How often is this storage container refilled per month?
<u>Example:</u> <u>Flour silo 1</u>	<u>36</u>	<input type="checkbox"/> Lbs <input type="checkbox"/> kilograms <input type="checkbox"/> tons imperial <input checked="" type="checkbox"/> tonnes metric <input type="checkbox"/> cubic metres	<input checked="" type="checkbox"/> Flour <input type="checkbox"/> Sugar <input type="checkbox"/> Salt <input type="checkbox"/> Other	<u>4 times</u>
_____	_____			_____
_____	_____			_____
_____	_____			_____
_____	_____			_____
Option 1B. Storage of dry ingredients in smaller storage containers				
Storage container identifier:	What is the container capacity?	Indicate the storage capacity units	What type of dry material is stored in this container?	How often is this container refilled or replaced per month?
<u>Example:</u> <u>Flour bags</u>	<u>20 kg bags</u>	<input type="checkbox"/> Lbs <input checked="" type="checkbox"/> kilograms <input type="checkbox"/> tons imperial <input type="checkbox"/> tonnes metric <input type="checkbox"/> cubic metres	<input checked="" type="checkbox"/> Flour <input type="checkbox"/> Sugar <input type="checkbox"/> Salt <input type="checkbox"/> Other	<u>20 times</u>
_____	_____			_____
_____	_____			_____
_____	_____			_____
_____	_____			_____

Part 1: Gathering data, using the calculator, and reporting to ChemTRAC

Worksheet 2: Dust collectors (for ingredient mixing)

Skip this worksheet if no dust collectors are in operation at your facility.

Dust collectors at your facility help control the amounts of flour, sugar, salt or other dry ingredients released into the air as dust during the mixing of dry ingredients. By completing this worksheet, you will have all the information that you need to complete the dust collector section of the ChemTRAC calculator for flour and dough production. You should collect data on your facility for the period from January 1 to December 31 of a calendar year.

2. Are dust collectors in operation at your facility, and if so, what are the details of their use?

Information is needed on the airflow rate of the dust collector (either in cubic feet per minute, or in cubic metres per second). Airflow is the speed at which the dust collector takes in air. You can find the airflow rate in the dust collector’s operating manual. If multiple dust collectors are found in the facility, you can enter them as separate entries, or by indicating the number of identical dust collectors in the ‘Number of Dust Collectors’ box. You will also need to estimate the amount of time that the dust collectors are removing dry ingredient dust from the air.

Information on a typical dust collector has been filled out as an example.

Dust collector identifier:	Air flow rate	Indicate the airflow rate units	Number of dust collectors	For what amount of time are dust collectors operating?		
				Hours per day	Days per week	Weeks per year
<u>Example:</u> <u>Collector 1</u>	<u>1200</u>	<input checked="" type="checkbox"/> <i>cfm (cubic feet per minute) OR</i> <input type="checkbox"/> <i>m³/s (cubic metres per second)</i>	<u>1</u>	<u>12</u>	<u>6</u>	<u>50</u>
_____	_____		_____	_____	_____	_____
_____	_____		_____	_____	_____	_____
_____	_____		_____	_____	_____	_____
_____	_____		_____	_____	_____	_____
_____	_____		_____	_____	_____	_____
_____	_____		_____	_____	_____	_____
Etc.						

Part 1: Gathering data, using the calculator, and reporting to ChemTRAC

Worksheet 3 – Proofing products with yeast

This worksheet will help in the collection of information on the use of yeast in your facility over the course of the year. You should collect data on your facility for the period from January 1 to December 31 of a calendar year.

3. How much yeast is used in your facility over the course of the year?

You should enter the quantity of all products prepared over the course of the year that use yeast as an ingredient. Then, estimate and enter the amount of yeast used (both initial dose and final spike) as a percentage of the total quantity of ingredients used per proofing batch. Finally, enter the action time per batch of the initial dose and final spike.

You can calculate the amount of yeast used as a percentage of the total quantity of all ingredients as follows:

$$\underline{\hspace{2cm}} \text{ weight yeast} \div \underline{\hspace{2cm}} \text{ weight dough} \times 100 = \underline{\hspace{2cm}} \% \text{ yeast in the product}$$

For example:

$$1.5 \text{ lbs yeast} \div 100 \text{ lbs dough} \times 100 = 1.5\% \text{ yeast in the product}$$

Product	Amount produced in one year	Indicate the units of the amount of product produced in one year	Initial yeast added (%)	Action time in hours	Final spike yeast added (%)	Spike time in hours
<u>Example:</u> <u>Rye bread</u>	<u>10000</u>	x Lbs <input type="checkbox"/> kilograms <input type="checkbox"/> tons (imperial) <input type="checkbox"/> tonnes (metric)	<u>1.5%</u>	<u>1</u>	<u>2%</u>	<u>1.5</u>
<u> </u>	<u> </u>		<u> </u> %	<u> </u>	<u> </u> %	<u> </u>
<u> </u>	<u> </u>		<u> </u> %	<u> </u>	<u> </u> %	<u> </u>
<u> </u>	<u> </u>		<u> </u> %	<u> </u>	<u> </u> %	<u> </u>
<u> </u>	<u> </u>		<u> </u> %	<u> </u>	<u> </u> %	<u> </u>
<u> </u>	<u> </u>		<u> </u> %	<u> </u>	<u> </u> %	<u> </u>
<u> </u>	<u> </u>		<u> </u> %	<u> </u>	<u> </u> %	<u> </u>
<u> </u>	<u> </u>		<u> </u> %	<u> </u>	<u> </u> %	<u> </u>
<u>Etc.</u>						

Using the calculator

This section of the guide provides a step-by-step walkthrough of the main two screens of the calculator. The calculator can be used properly by entering the information from the three worksheets into the appropriate sections of the calculator. The ChemTRAC calculator will then automatically calculate the quantities of ChemTRAC substances released from processes found in your flour and dough production facility.

Getting started

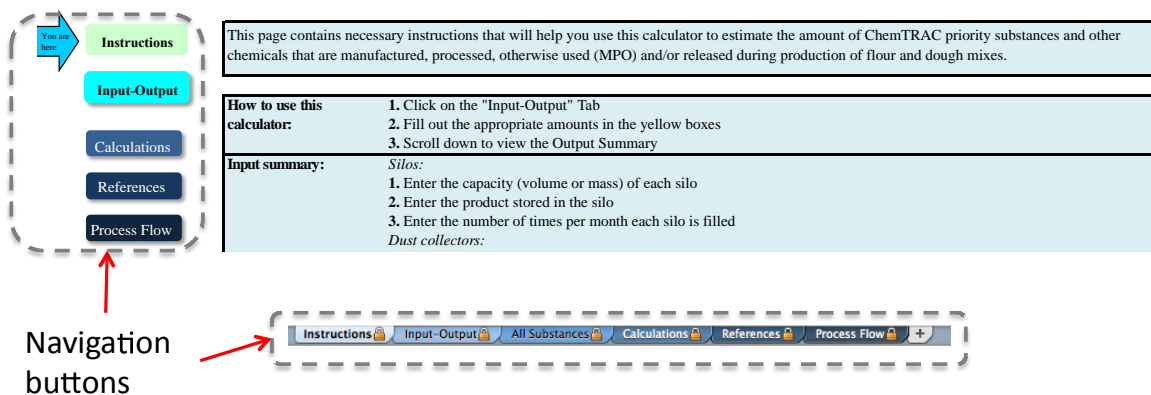
The ChemTRAC calculator for flour and dough production can be read with software such as Microsoft Excel or Open Office. To find a copy of the calculator, go to <http://www.toronto.ca/health/chemtrac/tools.htm> and click on the "Flour and Dough Mixes Manufacturing" link found under the Food and Beverage Sector.

The calculator consists of five different screens:

- Instructions
- Input-Output
- Calculations
- References
- Process flow

You only have to enter information into the Input-Output screen. The Calculations, References and Process flow screens are provided in the calculator mainly for reference. No information needs to be entered in these screens.¹ These additional screens are discussed in Appendix B.

You can navigate between screens by clicking the buttons on the left side of each screen or by clicking on the tabs at the bottom of each screen:



¹ If you have site-specific densities for dry ingredients used at your facility, they can be entered manually in the Calculator screen. See Appendix B for details.

Part 1: Gathering data, using the calculator, and reporting to ChemTRAC

The Instructions screen

The calculator should open on the Instructions screen. This screen contains instructions on how to use the calculator to estimate the amount of ChemTRAC substances and other substances that are used and released by your flour and dough production facility. It also provides a brief overview of the contents of the calculator. **You do not need to enter any information on this screen.**

Flour and Dough Mixes

Last Updated: Oct 25, 2011 JA, YS & ZI

This page contains necessary instructions that will help you use this calculator to estimate the amount of ChemTRAC priority substances and other chemicals that are manufactured, processed, otherwise used (MPO) and/or released during production of flour and dough mixes.

How to use this calculator:	<ol style="list-style-type: none">1. Click on the "Input-Output" Tab2. Fill out the appropriate amounts in the yellow boxes3. Scroll down to view the Output Summary
Input summary:	<p><i>Silos:</i></p> <ol style="list-style-type: none">1. Enter the capacity (volume or mass) of each silo2. Enter the product stored in the silo3. Enter the number of times per month each silo is filled <p><i>Dust collectors:</i></p> <ol style="list-style-type: none">4. Enter the airflow rate for each dust collector used near ingredient mixing areas5. Enter the operating schedule for each dust collector used near ingredient mixing areas <p><i>Products with yeast:</i></p> <ol style="list-style-type: none">6. For each product containing yeast, enter the amount produced in the reporting year7. Enter the initial baker's percent of yeast in the product8. Enter the action time for the initial yeast9. Enter the baker's percent of yeast added in the final spike (if any)10. Enter the spike time for the final yeast added (if any)
Output summary:	This table gives you the estimated quantity of ChemTRAC priority substances this activity manufactured, processed, otherwise used and/or released for the reporting year.
Other processes:	If your facility has other activities or sources that MPO and/or release ChemTRAC priority substances (chemicals), you will need to calculate the chemical amounts contributed from these activities as well. Please go to the ChemTRAC website for other calculators and more information.
Total MPO and Releases:	Once you have your estimates for all the activities or processes at your facility, enter the chemical amounts from each process into the "Calculation of Totals" calculator (available at www.toronto.ca/chemtrac) to determine if you are required to report.
Before you start make sure you have:	<ul style="list-style-type: none">- the capacity of each dry ingredient silo- the fill schedule for each dry ingredient silo- the airflow rate for dust collectors used near mixing areas- the operating schedule for dust collectors used near mixing areas- the quantity of each product containing yeast produced in the reporting year- the initial baker's percent yeast in the product- the action time for the initial yeast- the baker's percent of final spike yeast added- the action time for the final spike of yeast <p>NOTE: some of these may not apply to your facility</p>

Part 1: Gathering data, using the calculator, and reporting to ChemTRAC

The Input-Output screen

The Input-Output screen is the screen where you will enter all information applicable to your flour and dough production facility. Information is typed in **yellow boxes** only. Any yellow cells that do not apply to your flour and dough production facility can be left as is. **Dropdown menus** are also used to input some pieces of information. The Input-Output screen can be filled out using the tables in Worksheets 1, 2 and 3 that you have filled out on in the Worksheets for collecting information section of this guide.

Enter data from Worksheet 1 here

Enter data from Worksheet 2 here

Enter data from Worksheet 3 here

Silos and hoppers (for dry ingredients storage only)						
Silo ID	Capacity	Units	Contents	Fills/month		
Example: Flour silo 1	36	tonnes (metric)	Flour	4		
		Select units	Select conte			
		Select units	Select conte			
		Select units	Select conte			

Dust Collectors (for ingredient mixing)						
Dust Collector ID	Air flow rate	Units	Number of Dust Collectors	Operating Schedule		
				Hours/day	Days/week	Weeks/year
Example: Mixer 1 Dust Collector	1200	cfm	2	16	7	52
		Select units				
		Select units				
		Select units				

Products with yeast						
Product	Production	Units (per year)	Initial Yeast Added (%)	Action Time (hours)	Final Spike Yeast Added (%)	Spike Time (hours)
Example: Pizza Dough	10000	tonnes (metric)	1.5	1	0	0
		Select units				
		Select units				
		Select units				

Part 1: Gathering data, using the calculator, and reporting to ChemTRAC

The figure below shows an example of information from Worksheet 1 entered into the Input-Output screen. In this example, a user has entered information on its Storage Silo 1, which has a capacity of 10 metric tonnes of salt and is filled twice per month. Note that examples in grey boxes do not contribute to totals calculated by the ChemTRAC calculator.

Worksheet 1

Silos and hoppers (for dry ingredients storage only)				
Silo ID	Capacity	Units	Contents	Fills/month
<i>Example: Flour silo 1</i>	36	tonnes (metric)	Flour	4
Storage silo 1	10	tonnes (metric)	Salt	2
		Select units	Select contents	
		Select units	Select contents	
		Select units	Select contents	
		Select units	Select contents	

The figure below shows an example of information from Worksheet 2 entered into the Input-Output screen. In this example, a user has entered information on Dust Collector 1, which has a flow rate of 1,000 cubic feet per minute (cfm) and operates 10 hours per day, 7 days per week and 50 weeks per year.

Worksheet 2

Dust Collectors (for ingredient mixing)						
Dust Collector ID	Air flow rate	Units	Number of Dust Collectors	Operating Schedule		
				Hours/day	Days/week	Weeks/year
<i>Example: Mixer 1 Dust Collector</i>	1200	cfm	2	16	7	52
Dust Collector 1	1000	cfm	1	10	7	50
		Select units				
		Select units				

The figure below shows an example of information from Worksheet 3 entered into the Input-Output screen. In this example, a user has entered information on pasta dough, which was produced in quantities of 5,000 kg per year. During the proofing stage, an initial yeast spike of 1.2% was added over an action time 1 hour. There was no final yeast spike.

Worksheet 3

Products with yeast						
Product	Production	Units (per year)	Initial Yeast Added (%)	Action Time (hours)	Final Spike Yeast Added (%)	Spike Time (hours)
<i>Example: Pizza Dough</i>	10000	tonnes (metric)	1.5	1	0	0
Pasta dough	5000	kg	1.2	1	0	0
		Select units				
		Select units				

Part 1: Gathering data, using the calculator, and reporting to ChemTRAC

Once you have input the information from the three Worksheets into the Input-Output screen, the Output Summary found at the bottom of the screen indicates the ChemTRAC substances in kilograms that are manufactured, processed, otherwise used and released to air from your facility.² Note that only PM_{2.5} and VOCs are the only ChemTRAC substances that are likely to be released in flour and dough production facilities. You should compare these values to the ChemTRAC reporting thresholds to see if you are required to report ChemTRAC substances. See Interpreting Results on page 15 for more details.

Using our examples, a total of 8.1 kg of VOCs are manufactured and released to air per year. These VOCs would have come from the proofing of products with yeast. A total of 118.9 kg of PM_{2.5} (consisting of dry ingredient dust) are released to air per year. The amount of PM_{2.5} released to air is a combination of releases from the storage and mixing of dry products as well as from dust collectors.

OUTPUT SUMMARY (Only ChemTRAC priority substances)				
ChemTRAC Priority Substances	Quantity (kg/yr)			
	Manufactured ¹	Processed ¹	Otherwise Used ¹	Released to Air ¹
Particulate Matter (PM _{2.5})	118.9	0	0	118.9
Volatile Organic Compounds (VOCs)	8.1	0	0	8.1

¹ Definitions available in references

² The definitions for 'Manufactured', 'Processed', 'Otherwise Used', and 'Released to Air' can be found on the References screen of the ChemTRAC calculator.

Interpreting results

Compare results to thresholds. Once the amounts of ChemTRAC substances manufactured, processed, otherwise used have been calculated, you must compare these amounts to the ChemTRAC reporting thresholds listed in the Environmental Reporting and Disclosure Bylaw.³ These thresholds are also listed in Appendix C of this guide.

Combining multiple calculation methods. Some facilities may need to add results of the ChemTRAC calculator for flour and dough production with emissions from other processes that happen in the facility. This is discussed in Appendix C.

If there are no other processes and, the ChemTRAC calculator is the only tool used to estimate emissions, the values in the Output Summary table of the calculator can be compared directly to the ChemTRAC reporting thresholds. See an example in Table 2.

Table 2. Comparison of output from the ChemTRAC calculator and reporting thresholds

Output Summary table from the ChemTRAC calculator					Comparison to thresholds	
ChemTRAC Priority Substances	Manufactured (kg/yr)	Processed (kg/yr)	Otherwise used (kg/yr)	Released to Air (kg/yr)	ChemTRAC reporting threshold (kg/yr)	Is reporting required?
PM _{2.5}	118.9	0.0	0.0	118.9	30	YES
VOC	8.1	0.0	0.0	8.1	100	No

If results exceed thresholds you must report. If a ChemTRAC priority substance is manufactured, processed, or otherwise used in an amount equal to or greater than its ChemTRAC reporting threshold, then you would need to report that substance and the quantity released to air.

In the Table 2 example, only PM_{2.5} exceeds its reporting threshold. Therefore, its release to air would need to be reported to the ChemTRAC program.

³ The full by-law can be found at <http://www.toronto.ca/health/chemtrac/report.htm>.

Reporting to ChemTRAC

You are only required to report to ChemTRAC if you meet or exceed reporting thresholds for one or more priority substances.

Facilities that meet or exceed reporting thresholds for one or more substances must use the Online Reporting System to report to the ChemTRAC program. You can access the system from any computer with an internet connection. If your facility is exempt or below reporting thresholds, you can use the system to notify the City and volunteer environmental information.

You can find the online reporting system on the ChemTRAC webpage:
<http://www.toronto.ca/health/chemtrac/report.htm>.

You will need the following information to report to ChemTRAC

- Your First Time Access Code **OR** Registration ID
- Your facility name, address, number of employees and contact information
- Your NAICS code
- The names of substances you are reporting
- Quantities of priority substances (in kilograms).

The screenshot shows the Toronto City website's navigation menu with options like 'LIVING IN TORONTO', 'DOING BUSINESS', 'VISITING TORONTO', and 'ACCESSING CITY HALL'. The main content area is titled 'ChemTRAC - 4 Steps to Reporting' and includes a link for 'ChemTRAC Online Reporting System' which is highlighted with a red box. A callout box with an arrow points to this link, containing the text 'Click here to access the system'. Below the link, there is a paragraph explaining the reporting process and a flowchart with four steps: 'Step 1: Determine if the Bylaw applies to', 'Step 2: Determine if you need to report in a', 'Step 3: Prepare your data for reporting', and 'Step 4: Submit your data online by June 30th'.

Part 1: Gathering data, using the calculator, and reporting to ChemTRAC

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[User Guide](#)

ChemTRAC
You are in a secure site.



Welcome to the ChemTRAC data reporting system

This application will allow you to:

- Report the use and release of priority substances under Toronto's Environmental Reporting and Disclosure Bylaw (Municipal Code Chapter 423)
- Indicate if your facility is below reporting thresholds
- Indicate that the reporting requirements do not apply to your facility
- Provide information on your facility's environmental activities

To report online, you will need the **First Time Access Code** or your **Registration ID**.

To protect your privacy and security it is recommended that you close the browser after submitting your information.

To protect the secured exchange of information between you and this secure site, this transaction requires that your browser supports 128-bit data encryption. To continue, you may be asked to download and install the latest version of your browser.

As a security precaution, page sessions will end automatically as indicated at the top of each page.

To proceed with reporting information on chemical use and release you must read and consent to the [Terms of Use](#) and click the **I Agree** button below.

Note: Use of the browser Back button is not supported. Please use the reporting system's back/next button(if applicable) to navigate when necessary.

First Time Access Code for new users

If you are a first time user, you will need a “First Time Access Code” to use the system. The City sends most businesses their First Time Access Code by mail. If you did not receive or have lost your First Time Access Code, please call 3-1-1.

Registration ID for facilities already in the system

If you have already reported in the online system, you have been issued a Registration ID. This ID number is to be used for future visits to the ChemTRAC reporting system. If you have lost your Registration ID, please call 3-1-1.

Part 1: Gathering data, using the calculator, and reporting to ChemTRAC

First Time Signing In?

Register with First Time Access Code

Already Registered?

Registration ID:

If you have lost or forgotten your Registration ID, please contact us at (416) 338-7600

Sign In

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Once you have entered the online reporting system

The online system has seven steps. You will see your progress at the top of the screen. In the screenshot below, Step 1 is complete and Step 2 is in progress.

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ChemTRAC
You are in a secure site.

Step 1 Facility Registration
Step 2 Reporting Period
Step 3 Chemical Selection
Step 4 Use & Release (0 of 0)
Step 5 Environmental Statement
Step 6 Summary Notification
Step 7 Confirmation & Print

15min Note: This registration session will automatically end fifteen minutes after this Web page has finished loading.

To move to the next step, you must enter all the required information on the screen and click the “Next” button at the bottom of the screen. You can use the “Back” button to change the information you provided in previous steps.

Please remember to have all your information ready before you enter the system. **You will only have fifteen minutes to complete each screen before the system logs you out.** If your session expires before you hit the "submit" button, you will need to re-enter all your information. If you are running out of time, you can reset the countdown without losing information by switching to a different page then returning to the page you were working on.

Step 1. Facility registration

In Step 1, you will enter your facility name, address, number of employees and company contact information. You will also enter your **NAICS code** in the section entitled “Type of facility”. You must begin by selecting the 2-digit NAICS code from the dropdown menu. For flour and dough production facilities, this will be “31 – Manufacturing”. Then, you can select the appropriate 4-digit code (3118), and finally, the 6-digit code (311822).

Part 1: Gathering data, using the calculator, and reporting to ChemTRAC

Type of Facility

Please indicate your main type of business by providing the North American Industry Classification System (NAICS) code that best applies to your facility. If more than one code applies to your facility, select one and proceed.

Not sure of your NAICS Code? Click this link, [NAICS Code Help](#), to search for your code.

NAICS 2-Digit: 31 - Manufacturing

NAICS 4-Digit: 3118 - Bakeries & Tortilla Mfg.

NAICS 6-Digit: 311822 - Flour Mixes & Dough Mfg. from Purchased Flour

Step 2. Reporting period

In Step 2, you will choose the calendar year from the dropdown menu and select "Yes" in response to the statement "I am ready to report for the year above".

If your calculations showed you to be below the reporting threshold, you can enter "No" in response to the statement "I am ready to report for the year above" and then enter "I do not meet the threshold."

Step 3. Chemical selection

In Step 3, you will identify the substances that your facility used or released at or above reporting thresholds. The example below builds off of Table 2 in this guide. Recall that PM_{2.5} was the only substance that exceeded thresholds.

<input type="checkbox"/>	Polycyclic Aromatic Hydrocarbons (PAHs)
<input type="checkbox"/>	11104-93-1 Nitrogen Oxides (NOx)
<input checked="" type="checkbox"/>	Particulate Matter 2.5 (PM 2.5)
<input type="checkbox"/>	Volatile Organic Compounds (VOCs) Total

Step 4. Use and release

In Step 4, you will enter information for each substance that you identified in Step 3. You will begin by determining whether a substance was used or released, and from where / to where.

For flour and dough production facilities, PM_{2.5} are "released to air" and VOCs are "manufactured" and "released to air".













You will then need to **enter the total quantity of the substances that your facility manufactured and released, in kilograms and without decimals.** For example, 17.2 kg would be rounded to 17 kg and 17.6 kg rounded to 18 kg.

Part 1: Gathering data, using the calculator, and reporting to ChemTRAC

Finally, you will select an estimation method from the dropdown menu.

Select “ChemTRAC calculator” if you have used the ChemTRAC calculator.

The example below illustrates how to complete Step 4 for NO_x using information from Table 2 of this guide.

Particulate Matter 2.5 (PM 2.5) (Reporting Threshold = 30.0 kg)	
Quantity (kg)	Estimation Method
If you used more than one method to estimate data, please choose the main one	
Manufactured: 	<input type="text"/> - Select Estimation Method From List - 
Processed: 	<input type="text"/> - Select Estimation Method From List - 
Otherwise Used: 	119 ChemTRAC calculator 
Total Use:	119
Release to Air: 	119 ChemTRAC calculator 
Release to Land: 	<input type="text"/> - Select Estimation Method From List - 
Release to Surface Water: 	<input type="text"/> - Select Estimation Method From List - 
Total Release:	119

Step 5. Environmental statement

In Step 5, you have the option of entering information about your environmental activities including: if you have completed environmental training courses, created a Pollution Prevention Plan, or adopted an Environmental Management System. Pollution Prevention Plans are discussed briefly in the Pollution prevention strategies section on page 22 of this guide. You will also specify if you report to the National Pollutant Release Inventory or to the Toronto Sewer Use Bylaw.

Steps 6 and 7. Summary notification, confirmation and printing

In Steps 6 and 7, you will not enter any new information. You will review the information you provided, submit your report, and receive a printable record.

Optional reporting for facilities below threshold levels of priority chemicals

For those businesses or facilities that do not meet or exceed ChemTRAC thresholds, the online reporting system allows you to identify yourself as a “non-reporter”. This will allow you to stay informed on ChemTRAC program initiatives. It will also help Toronto Public Health assess trends over time and gauge the effectiveness of the ChemTRAC program.

Part 2: Reducing the environmental impact of your facility

Part 2: Reducing the environmental impact of your facility

This section of the guide provides information about reducing the environmental impact of your facility.

- *It provides an overview of pollution prevention strategies*
- *It identifies relevant control technologies for reducing emissions*
- *It provides guidance on getting started with pollution prevention*

Pollution prevention strategies

The ChemTRAC program requires facilities to report on substances that are manufactured, processed or otherwise used in quantities that are equal to or greater than ChemTRAC reporting thresholds. Although it is not required as part of the ChemTRAC program, it is good business practice for facilities to also take action to reduce the creation, use and release of ChemTRAC priority substances.

Minimizing use and release of harmful substances at the source is called pollution prevention (or P2) and is widely recognized as good business practice. Collecting data for ChemTRAC gives you information needed to consider P2 options in your facility.

How can a business benefit from pollution prevention (P2)?

- P2 can reduce operating costs from the use of chemicals and energy
- P2 can reduce the costs of waste management and the risk of liability
- P2 can improve worker health and safety
- P2 can improve community relations and build a business' reputation as socially and environmentally responsible
- P2 can improve a business' ability to respond to consumer demands for "greener" products

Pollution prevention strategies

Businesses have many options for reducing the use of harmful substances in their facilities. Not all of the options will be relevant to all businesses. Three types of strategies and examples specific to flour and dough production facilities are presented below.

1. **Use low-cost, good operating practices.** Simple changes to normal practices can reduce the use and release of harmful chemicals at no cost to business owners.

For example: Keep dust collectors in good operating condition. Well-maintained equipment uses less energy, saves money, and improves the ability to reduce releases of PM_{2.5}.

2. **Install control technologies or equipment.** New control technologies and equipment can reduce the release of harmful chemicals and save money by improving operating efficiency.

For example: Install VOC collection devices on proofing equipment. These devices can reduce the quantities of VOC released to air.

3. **Modify products or inputs.** Traditional products and processes can be replaced with alternatives that use and release less harmful chemicals.

For example: Switch to water-based biodegradable cleaners. Though not discussed in the guide, caustic or acidic cleaners emit VOCs.

Control technologies for reducing emissions

Control technologies can reduce, but not eliminate, the quantity of ChemTRAC substances that are released from flour and dough production facilities. Control technologies can be used to reduce the quantity of substances released during the storage and mixing of dry ingredients.

Dry ingredient preparation control technologies: Dust collectors

Recall that particulate matter (PM_{2.5}) in the form of flour, sugar, salt, or other powdery material, is released into the air during the storage and mixing of dry materials.

Dust collectors. A dust collector (also known as a baghouse) is a control technology that can help reduce the amount of PM_{2.5} that is released during the mixing of dry materials. A dust collector takes in air with a high abundance of PM_{2.5}, collects much of the PM_{2.5} within filter bags, and releases the air with a reduced amount of PM_{2.5}. No matter what amount of PM_{2.5} is entering the dust collector, the dust collector can reduce PM_{2.5} quantities down to about one particle per three cubic metres of air.

Figure 2 summarizes control technologies in flour and dough production facilities.

Figure 2. Control technologies found in flour and dough production facilities

Flour and dough production step	Control technology	ChemTRAC substance being controlled	Reduction ability of the control technology
Mixing and storage of dry ingredients (flour, sugar, salt, other)	Dust Collector	Particulate matter (PM _{2.5})	Reduces the release of PM _{2.5} down to about 1 grain of PM _{2.5} dust per 3 cubic metres of air

More ways to reduce costs and improve performance

Minimizing the use and release of harmful substances is one aspect of improving environmental performance. Flour and dough production facilities can also take other steps to improve their economic and environmental sustainability. One such step is to reduce energy use. By reducing energy use, flour and dough production facilities can save money on energy bills and reduce their environmental impact. Many energy-efficiency technologies have very short payback periods. Utilities also offer incentives for energy efficiency measures.

To reduce energy use, low-cost, good operating procedures can be adopted, and new technology or equipment can be installed. This includes:

- undergoing an energy audit to identify opportunities for savings;
- encouraging employees to turn off lights and equipment when not in use;
- replacing old motors and heating units with more efficient equipment;
- installing a programmable thermostat to control heating and cooling; and
- purchasing a heat exchanger system to recycle wasted burner heat.

Getting started with pollution prevention

The good news is that you've already started by calculating emissions of ChemTRAC priority substances.

Next steps can include:

- evaluating actions to reduce use and release of energy, water and ChemTRAC substances;
- identifying funding for upgrades to facilities and equipment;
- implementing all cost-effective upgrades; and
- tracking changes in the use and release of energy, water and substances.

To help in these steps, ChemTRAC is offering **free technical assistance visits**, **free training workshops** and additional resources to help businesses create an inventory of chemicals used at their facility, comply with the ChemTRAC program, and identify opportunities to improve their facilities' environmental performance.

For more information, visit:

http://www.toronto.ca/health/chemtrac/assistance_program.htm and
<http://www.toronto.ca/health/chemtrac/gogreen.htm>.

Additional resources on reducing the environmental impact of flour and dough production facilities include:

- Australia Government. 2007. Emission Estimation Technique by Industry. **http://www.npi.gov.au/handbooks/approved_handbooks/sector-manuals.html**
- Capital Regional District. Codes of Practice by Industry. **<http://www.crd.bc.ca/wastewater/sourcecontrol/codespractice.htm>**
- Toronto Public Health, ChemTRAC. December 2010. Resource for Greening Food and Beverage Manufacturing: Pollution Prevention Information. **www.toronto.ca/health/chemtrac/pdf/GreenFoodBev.pdf**
- University of Queensland Australia. Eco-Efficiency Toolkits and Fact Sheets. **<http://www.gpa.uq.edu.au/CleanProd/toolkits/toolkits.htm>**
- U.S. EPA. 1999. Environmental Compliance Guide for Food Processors. **<http://www.epa.gov/compliance/resources/publications/assistance/sectors/multifood.pdf>**

Appendices

The remaining pages of this guide offer additional material for your reference:

Appendix A. Printer-friendly versions of the three worksheets

Appendix B. Additional material related to the ChemTRAC calculator.

- *Descriptions of the remaining calculator screen*
- *How the calculator uses emission factors to calculate quantities of ChemTRAC substances*
- *How emission factors can be changed to site-specific values.*

Appendix C. Combining the ChemTRAC calculator with other sources:

How to combine the ChemTRAC calculator for flour and dough production with emissions data from other sources.

Appendix A. Printer-friendly worksheets

These worksheets can be printed and completed by hand so that all information can be readily available for entry into the ChemTRAC calculator.

Worksheet 1 table: silos and hoppers

Option 1A. Storage of dry ingredients in large containers (silos, hoppers, etc.)				
Storage container identifier:	What is the container capacity?	Indicate the storage capacity units	What type of dry material is stored in this container?	How often is this storage container refilled per month?
<i>Example:</i> <u>Flour silo 1</u>	<u>36</u>	<input type="checkbox"/> Lbs <input type="checkbox"/> kilograms <input type="checkbox"/> tons imperial <input checked="" type="checkbox"/> tonnes metric <input type="checkbox"/> cubic metres	x Flour <input type="checkbox"/> Sugar <input type="checkbox"/> Salt <input type="checkbox"/> Other	<u>4 times</u>
_____	_____			_____
_____	_____			_____
_____	_____			_____
_____	_____			_____
_____	_____			_____
_____	_____			_____
_____	_____			_____
Option 1B. Storage of dry ingredients in smaller storage containers				
Storage container identifier:	What is the container capacity?	Indicate the storage capacity units	What type of dry material is stored in this container?	How often is this container refilled or replaced per month?
<i>Example:</i> <u>Flour bags</u>	<u>20 kg bags</u>	<input type="checkbox"/> Lbs <input checked="" type="checkbox"/> kilograms <input type="checkbox"/> tons imperial <input type="checkbox"/> tonnes metric <input type="checkbox"/> cubic metres	x Flour <input type="checkbox"/> Sugar <input type="checkbox"/> Salt <input type="checkbox"/> Other	<u>20 times</u>
_____	_____			_____
_____	_____			_____
_____	_____			_____
_____	_____			_____
_____	_____			_____
_____	_____			_____
_____	_____			_____

Additional Material

Appendix B. Additional material related to the ChemTRAC calculator

This appendix describes the remaining three screens of the ChemTRAC calculator. You do not need to enter any information into these screens. However, if site-specific emission factors are known, they can be entered manually in the Calculations screen.

This appendix also describes emission factors and how the ChemTRAC calculator makes use of them.

The ChemTRAC calculator Calculations screen

The Calculations screen provides the calculations based on the information provided in the Input-Output screen. You do not need to enter any information on this screen.

While you do not need to enter any information on this screen, emissions factors for particulate matter can be modified if site-specific information is available. Modifying emission factors in the “silos and hoppers” and “dust collectors” table can modify the calculation of PM_{2.5} released from dry ingredient storage, receiving, conveying, and mixing. If emission factors are modified, be sure that they are entered in the appropriate units (mg/ m³).

Dry ingredient densities can also be modified for flour, sugar, salt and other dry ingredients. If densities are modified, be sure that they are entered in kilograms per cubic metre (kg/m³). Modifying densities will alter the quantity of PM_{2.5} released from the storage of dry ingredients only. The dry ingredient densities in the Calculations screen are illustrated below.

Calculations

• This page provides detailed calculations based on the information provided in the Input table. It also provides sample calculations and an assessment of emission factor data quality.

• If you have site specific emission factors you may use them in the table below. If you choose to insert your own emission factor ensure that the units have been converted accordingly.

ChemTRAC Priority Substances	CAS #	Quantity (kg/yr)			
		Manufactured	Processed	Otherwise Used	Released to Air
Particulate Matter (PM _{2.5})	n/a	0.0	0.0	0.0	118.9
Volatile Organic Compounds (VOCs)	n/a	8.1	0.0	0.0	8.1

Material	Density (kg/m ³)
Flour	770
Sugar	700
Salt	1280
Other	917*

These densities can be modified

* if you have another density for other products stored, enter it here

Additional Material

The ChemTRAC calculator Reference screen

The Reference screen describes from where the emission calculations and assumptions used on the Calculations screen were taken. Source documents can be viewed by clicking on the links. The Reference screen also provides the definitions for 'Manufactured', 'Processed', 'Otherwise Used', and 'Released to Air'. No information needs to be entered on this screen.

Note that this tool is provided solely as an aid, and the City of Toronto makes no representation or warranty as to its applicability to your facility or to your obligation to comply with the Environmental Reporting and Disclosure Bylaw (Municipal Code Chapter 423). It is the responsibility of each facility owner or operator to take the necessary steps to ensure compliance with the bylaw.

This page provides all the reference information for the emission factors and assumptions used in the Calculations page. Click on the links below to view the source documents.

Emission factors and an assessment of their data quality are provided in the US EPA AP-42 "Bread Baking", Section 9.9.6, 1997

<http://www.epa.gov/ttn/chief/ap42/ch09/final/c9s09-6.pdf>

and the National Pollutant Inventory "Emission Estimation Techniques Manual for Bread Manufacturing", Version 1.1, June 2003

<http://www.npi.gov.au/publications/emission-estimation-technique/pubs/bakery.pdf>

Bulk Density of dry materials estimated using Powder and Bulk - Bulk Density Chart

http://www.powderandbulk.com/resources/bulk_density/material_bulk_density_chart_a.htm

Dust collector emission factors are provided in the Ontario Ministry of the Environment publication "Procedure for Preparing and ESDM Report" PIBS #3614e03, March 2009

<http://www.ene.gov.on.ca/envision/gp/3614e03.pdf>

Definitions¹

Manufacture - To produce, prepare or compound a priority substance and includes the coincidental production of a priority substance as a by-product.

Process - The preparation of a priority substance, after its manufacture, for commercial distribution and includes the preparation of a substance in the same physical state or chemical form as that received by the facility, or preparation which produces a change in physical state or chemical form.

Otherwise Use - Any use, disposal or release of a priority substance at a facility that does not fall under the definitions of "manufacture" or "process." This includes the use of the priority substance as a chemical processing aid, manufacturing aid or some other use.

Release - The emission or discharge of a priority substance, whether intentional, accidental or coincidental, from a facility into the environment.

The ChemTRAC calculator Process Flow screen

The Process Flow screen provides a diagram that shows examples of the steps that could be involved in a flour and dough production facility, and identifies process steps where ChemTRAC priority substances could be used or released. This diagram is the same as Figure 1 in this guide. Not all facilities will follow all of these steps in this exact order. Also, not all facilities will have substance releases at the process steps identified, and some may have substance uses or released at steps that have not been identified in the diagram. You do not need to enter any information on this screen.

Additional Material

Emission factors for flour and dough production facilities

The ChemTRAC calculators are all based on published estimates of the emissions associated with different industrial processes. These estimates are called “emission factors”. Emission factors indicate the amount of a specific substance (e.g. PM_{2.5}) emitted by a specific activity (e.g. storing one cubic metre of dry ingredients).

For instance, the ChemTRAC calculator uses the emission factors listed in Table 3 to estimate emissions of PM_{2.5} from flour and dough production facilities.

Table 3. Emission factors for PM_{2.5}

Source	Substance	Emission Factor
Silos and hoppers	PM _{2.5}	20 mg / m ³
Dust collectors	PM _{2.5}	20 mg / m ³

Example: Using emission factors to estimate PM_{2.5} emissions from dust collectors

Table 3 shows that 20 mg of PM_{2.5} is emitted for every m³ of dry ingredients processed by dust collectors.

Assume that the facility handled air containing dry ingredient dust at a rate of 1 m³ per second in 2011 for 10 hours per day, 7 days per week and 50 weeks per year.

Total emissions of PM_{2.5} for 2011 from dust collectors

= 1 cubic metre per second * 36,000 seconds per day * 7 days per week * 50 weeks per year * 20 mg per cubic metres / 1,000,000 mg per kg

= 252 kg of PM_{2.5}

Appendix C. Combining the calculator with other sources

Depending on your business, you may need to use more than one calculator to calculate the use and release from all processes at your facility. The "Calculation of Totals" calculator can be used to compile your data.⁴ In this calculator, you can enter the values for each process at your facility. The calculator returns the total manufactured, processed or otherwise used amounts for the facility, by substance, and then compares it to the corresponding reporting threshold. The figure on the following page shows the main screen of the Calculation of Totals calculator.

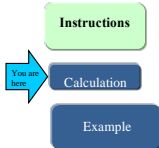
⁴ The Calculation of Totals calculator can be found under the Totals bullet at <http://www.toronto.ca/health/chemtrac/tools.htm>.

Additional Material



Calculation of Totals

Last Update: October 21, 2011 by YS, JA, & ZI



- This page gathers information to help you determine your facility-wide substance manufacture, process, otherwise use (MPO) and release estimates.
- For each source of priority substances, enter the process name and then provide the quantity of each substance manufactured, processed, otherwise used and released.
- In the "MPO" columns, identify whether the priority substance was Manufactured, Processed or Otherwise used. To do this you may consult the "Guide to Reporting" available at www.toronto.ca/chemtrac. The definitions are provided in the Examples tab.
- At the end of each row, you will find the facility-wide totals that need to be compared with the Mass Reporting Thresholds.
- The last 4 columns indicate the amount of each substance that you must report to the City of Toronto

The total quantities of ChemTRAC substances that would have to be reported are listed here

Group	Substance	Quantity (kg/yr)				Quantity (kg/yr)			
		Manufactured	Processed	Otherwise Used	Released to Air	Manufactured	Processed	Otherwise Used	Released to Air
		Process#1:				Process#2:			
A	Acetaldehyde*								
	Acrolein*								
	Benzene*								
	1,3-Butadiene*								
	Carbon tetrachloride*								
	Chloroform (Trichloromethane)*								
	Chromium (non-hexavalent) ¹								
	1,2-Dibromoethane (Ethylene dibromide)								
	1,4-Dichlorobenzene*								
	1,2-Dichloroethane (Ethylene dichloride)*								
	Dichloromethane (Methylene chloride)								
	Formaldehyde*								
	Manganese ¹								
	Nickel ¹								
	Tetrachloroethylene (Perchloroethylene)								
	Trichloroethylene*								
	Vinyl chloride								
Cadmium ¹									
Chromium (hexavalent) ¹									
Lead ¹									
Mercury ¹									
B	Total polycyclic aromatic hydrocarbons (PAHs)*								
	Nitrogen oxides (NOx)								
C	Particulate matter 2.5 (PM2.5)								
	Total Volatile organic compounds (VOCs) ²								

Enter values from the Output Summary table of your first calculator here

Enter values from the Output Summary table of your second calculator here

Etc...

Totals to be compared with the threshold (kg/yr)	Mass Reporting Threshold (kg/yr)	Reportable?	To be reported			
			Total Manufactured (kg/yr)	Total Processed (kg/yr)	Total Otherwise Used (kg/yr)	Total Released to Air (kg/yr)
0	100	No	---	---	---	---
0	100	No	---	---	---	---
0	100	No	---	---	---	---
0	100	No	---	---	---	---
0	100	No	---	---	---	---
0	100	No	---	---	---	---
0	100	No	---	---	---	---
0	100	No	---	---	---	---
0	100	No	---	---	---	---
0	100	No	---	---	---	---
0	100	No	---	---	---	---
0	100	No	---	---	---	---
0	100	No	---	---	---	---
0	100	No	---	---	---	---
0	10	No	---	---	---	---
0	100	No	---	---	---	---
0	100	No	---	---	---	---
0	100	No	---	---	---	---
0	100	No	---	---	---	---
0	1	No	---	---	---	---
0	10	No	---	---	---	---
0	10	No	---	---	---	---
0	1	No	---	---	---	---
0	10	No	---	---	---	---
0	200	No	---	---	---	---
0	30	No	---	---	---	---
0	100	No	---	---	---	---

Additional Material

The total combined release of substances (whether from the ChemTRAC flour and dough production calculator only, or from other substance quantification methods as well) should be compared to the mass reporting thresholds listed in Schedule A of the Environmental Reporting and Disclosure Bylaw and provided in Table 4 below.

Table 4. ChemTRAC priority substances and their reporting thresholds (adapted from Schedule A of the Environmental Reporting and Disclosure bylaw)

ChemTRAC substance	ChemTRAC Mass reporting threshold (kg/yr)	Concentration threshold ^c % w/w
Acetaldehyde	100	1
Acrolein	100	1
Benzene	100	1
1,3-Butadiene	100	1
Cadmium and its compounds	1	0.1
Carbon tetrachloride	100	1
Chloroform (Trichloromethane)	100	1
Chromium, Hexavalent and its compounds	10	0.1
Chromium, Non-hexavalent and its compounds	100	1
1,2-Dibromo ethane (Ethylene dibromide)	100	1
1,4-Dichlorobenzene	100	1
1,2-Dichloroethane (Ethylene dichloride)	100	1
Dichloromethane (Methylene chloride)	100	1
Formaldehyde	100	1
Lead and its compounds	10	0.1
Manganese and its compounds	10	1
Mercury and its compounds	1	0
Nickel and its compounds	100	1
Nitrogen Oxides (NO _x)	200	N/A
Particulate Matter 2.5 (PM _{2.5})	30	N/A
Polycyclic Aromatic Hydrocarbons (PAHs)	10	N/A ^b
Tetrachloroethylene (Perchloroethylene)	100	1
Trichloroethylene	100	1
Vinyl chloride	100	1
Volatile Organic Compounds (VOCs) total	100	N/A

Notes:

- N/A = not applicable
- The concentration threshold % w/w is not relevant to the emissions quantified using the ChemTRAC calculator for flour and dough production facilities

Appendix D. Reporting Checklist

Environmental Reporting and Disclosure Bylaw (Municipal Code Chapter 423)

Checklist for Facilities in Toronto

Make sure the data you submit in your reports are accurate. Here is a checklist to help you.

- Enter complete facility and contact information. If you are a consultant, identify yourself as the technical contact.
- Submit a **separate** report for **each** facility in Toronto.
- Complete the statement of certification.
- Report **all** of the priority substances (chemicals) that meet or exceed (equal to or greater than) the reporting thresholds.
- Report **both use and release** amounts of all priority substances that meet or exceed the reporting thresholds.
- Estimate use and release for **all** sources and processes in your facility.
 - This includes process such as heating by natural gas combustion, welding, equipment cleaning, drilling, grinding, crushing, sanding, and blending.
- Review the exemptions in the bylaw, such as building heating, and do not include these in your calculations.
- Compare current year estimates with that of previous years (if available) and explain any differences if present.
- If you report to NPRI and there is a difference between the amount of a substance reported to ChemTRAC and NPRI, explain the reason for the difference.
- You may need to make your records available for audit purposes. Securely store the records you based your report on and document:
 - Assumptions and parameters used for calculation and estimation of emissions
 - Procedures and methods used to measure emissions
 - Calibration records of any equipment used to measure emissions

Additional Material

Use and Release Calculations

- There are many sources of information that can help you identify the priority substances in your facility. Be sure to check all of them, including:

purchase records	year-end inventory	Material Safety Data Sheets (MSDS)
raw materials	Certificate of Approval or Environmental Compliance Approval	correspondence with supplier

- Use the best available method for use and release estimation. Use (if any) the most appropriate and most recent ChemTRAC calculator (available at toronto.ca/health/chemtrac/tools.htm).
- Enter all the reportable data in kilograms (kg).
- Calculate the **total** amount of a substance used and released in **all** processes.
 - For example, process 1 used 90 kg VOC and released 75 kg. Process 2 used 60 kg VOC and released 56 kg. The total amount of use would be $90+60=150$ kg and release $75+56=131$ kg.
 - To help with these calculations you can use the free online ChemTRAC totals calculator.
- Double check that **decimal places** are entered in the correct place (e.g. 3.47 vs. 347)
- Check that the **total release** amount (release to land+water+air) is equal to or less than **total use** amount (manufactured+processed+otherwise used).
- Use the **average value** for use and release estimation if the substance content is listed in a range (e.g. 10-12% VOCs) on Material Data Safety Sheets or on other sources of substance data.
- The following priority substances are VOCs. Be sure to report them separately **and also include** them in your VOC estimation:

Acetaldehyde	Acrolein	Benzene
1.3-butadiene	Carbon	Chloroform
	Tetrachloride	
1,4-Dichlorobenzene	1,2-Dichloroethane	Formaldehyde
Trichloroethylene	Vinyl chloride	Polycyclic Aromatic Hydrocarbons (PAHs)

Additional Material

- Consider the effects of pollution control devices (e.g. filter) in the emission calculations.
- Consider the amount of waste transferred off-site (if any) in emission calculations.

Disclaimer: This checklist is for information only. The City of Toronto assumes no liability for accuracy or completeness. Readers are responsible for ensuring compliance with Toronto's Environmental Reporting and Disclosure Bylaw (Municipal Code Chapter 423). This information should not be relied upon as a substitute for legal or professional advice. Readers should seek their own legal or professional advice in regard to their use of the information contained in it.