

# **Guide to calculations for ChemTRAC reporting:**

## **Seasoning and dressing manufacturing**

**Version 1.1**

**February 2013**

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## How do I use this guide?

**Part 1 of this guide will help you understand the ChemTRAC program, collect information about your facility, use the ChemTRAC calculator for Seasoning and Dressing manufacturing, 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 information about emissions calculations.**

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*City of Toronto, 2012*

*For more information about ChemTRAC, call 3-1-1 or visit [www.toronto.ca/chemtrac](http://www.toronto.ca/chemtrac)*

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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 3 on page 29.

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. Seasoning and dressing manufacturers are covered by this bylaw.

This guide is designed to help you:

- 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 Seasoning and Dressing Manufacturing sector

The North American Industrial Classification System (NAICS) code 311940 includes facilities that manufacture seasonings and dressings such as dips and spreads, salad dressings, sauces and sauce mixes, seasoning and table salt, vinegars, mustards, natural food colourings, extracts.

It excludes facilities that manufacture ketchup and tomato-based sauces, canning gravy, dehydrated bouillon and salad dressing mixes, flavouring syrups and industrial salts.

Seasoning and dressing manufacturers 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 of 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 seasoning and dressing manufacturers

Figure 1 indicates typical steps taken in a seasoning and dressing manufacturer. Not all facilities will follow these steps exactly. However, most manufacturers will receive, convey, and mix dry ingredients.

Figure 1 also shows that one ChemTRAC priority substance is released in a typical seasoning and dressing manufacturer: Particulate Matter 2.5 (PM<sub>2.5</sub>).

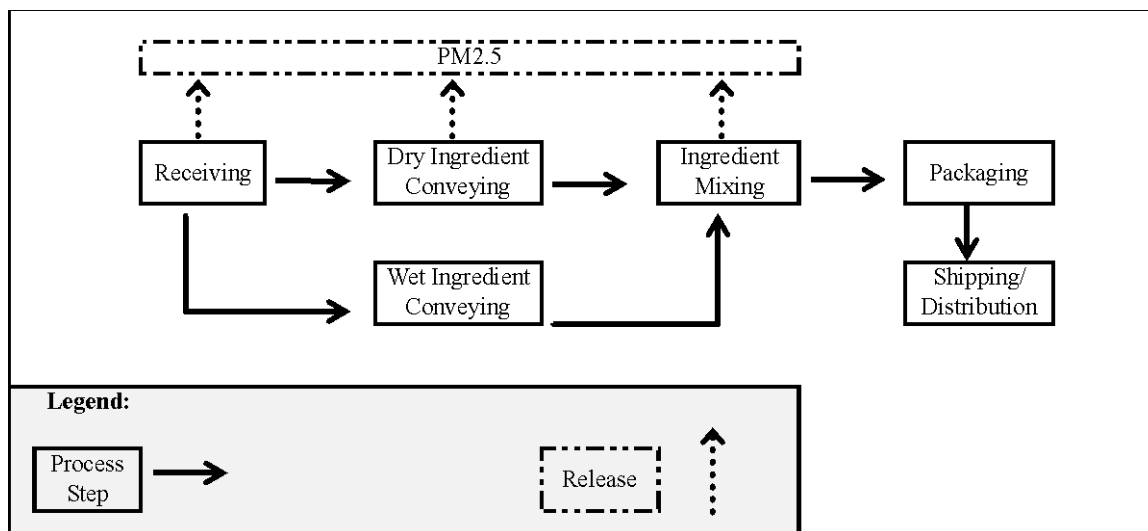


Figure 1. Typical steps in a seasoning and dressing manufacturer

**Particulate Matter 2.5 (PM<sub>2.5</sub>).** 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<sub>2.5</sub> and may not be visible to the naked eye. In a seasoning and dressing manufacturer, PM<sub>2.5</sub> is released into the air during the receiving, conveying and mixing of dry ingredients such as flour, sugar, salt or other powder.

### The health effects of PM<sub>2.5</sub>

**PM<sub>2.5</sub>.** Because of their small size, PM<sub>2.5</sub> 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.

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 to prepare you to use the ChemTRAC calculator for seasoning and dressing manufacturers.

### Worksheets for collecting information

The worksheet found on the next page is intended to help you collect all the information needed to use the ChemTRAC calculator for Seasoning and Dressing Manufacturing. One worksheet is provided:

- Dust collectors (for dry ingredient receiving, conveying and mixing)

A printer-friendly version the worksheet can be found as Appendix A. It can be printed and completed by hand so that you have all information available on-hand for entry into the ChemTRAC calculator.

Note: if your facility has more processes than are included in the ChemTRAC calculator for Seasoning and Dressing Manufacturing, 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 Seasoning and Dressing Manufacturing. 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.



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

### Worksheet 1 – Dust collectors (for dry ingredients)

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

This worksheet will help you collect information on dust collectors that help control the amounts of flour, sugar, salt or other dry ingredients released into the air as dust during the receiving, conveying, and mixing of dry ingredients. You should collect data on your facility for the period from January 1 to December 31 of a calendar year.

**1. 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 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
Collector 1	1200	<input checked="" type="checkbox"/> x cfm (cubic feet per minute) OR <input type="checkbox"/> m <sup>3</sup> /s (cubic metres per second)	1	12	6	50
Etc.						

### Using the calculator

To calculate your use and release of ChemTRAC substances, you need to enter the information from the worksheets in this guide into the appropriate sections of the ChemTRAC calculator for Seasoning and Dressing Manufacturing. The ChemTRAC calculator will then automatically calculate the quantities of ChemTRAC substances released from your seasoning and dressing manufacturer. This section of the guide provides a step-by-step walkthrough of the use of the calculator.

#### *Getting started*

The ChemTRAC calculator for Seasoning and dressing manufacturers 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 "Seasoning and dressing manufacturers" link found under the Food and Beverage Sector.

The calculator consists of five different screens:

- Instructions
- Input-Output
- Calculations
- References
- Process Flow

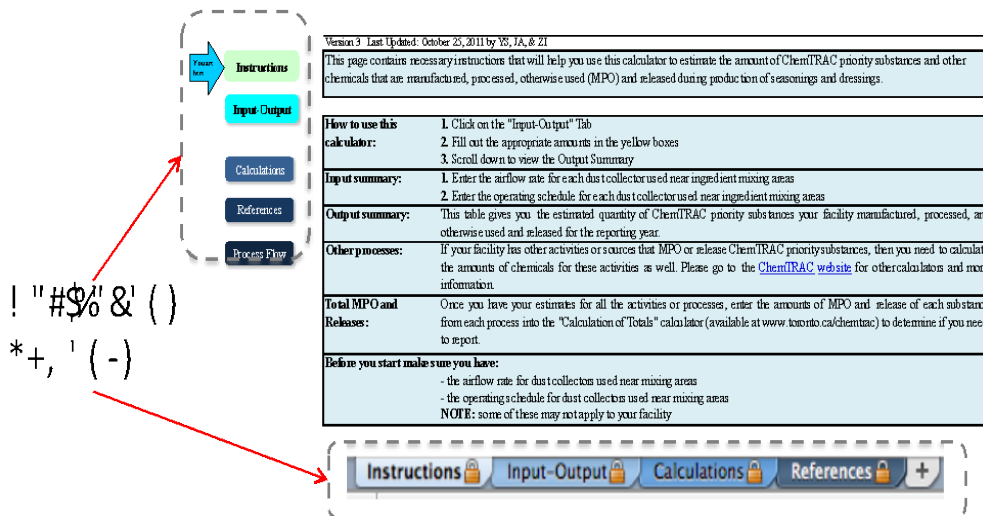
**You only have to enter information into the Input-Output screen.** The other four screens are provided in the calculator mainly for reference. No information needs to be entered in these screens.<sup>1</sup> These additional screens are discussed in Appendix C.

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:

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<sup>1</sup> If you have site-specific emission factors for any ChemTRAC substance, 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 seasoning and dressing manufacturer. It also provides a brief overview of the contents of the calculator. **You do not need to enter any information on this screen.**

### The Input-Output screen

The Input-Output screen is the screen where you will enter all information applicable to your facility. Information is typed in **yellow boxes** only. Any yellow cells that do not apply to your facility can be left as is. **Dropdown menus** are also used to input some information. The Input-Output screen can be filled out using the responses to the **questions** found within **Worksheet 1** of this guide. Values in grey cells are examples only, and do not enter into the calculation of the release of any substances.

Once you input your facility's information into the appropriate yellow boxes and dropdown menus, the calculator automatically calculates the quantities of ChemTRAC substances that are manufactured, processed, otherwise used and released to air from your facility.<sup>2</sup> The values are displayed in the **Output table** found at the bottom of the Input-Output screen. You should compare the values that are manufactured, processed or otherwise used to the ChemTRAC reporting thresholds to see if you are required to report ChemTRAC substances. See *Interpreting Results* on page 11 for more information.

The image below illustrates the different areas of the input-output screen.

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

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

### Entering information from Worksheet 1: Dust collectors

The image below displays the area of the Input-Output screen where you enter information on dust collectors. As an example, the information from Worksheet 1 is entered into the appropriate areas of the screen.

Please complete the INPUT table below.

Dust Collector ID	Air flow rate	Units	Number of Dust Collectors	Operating Schedule		
				Hours/day	Days/week	Weeks/year
Example: Mixer 1 Dust Collector	1,200	cfm	2	12	6	52
		Select unit				
		Select unit				
		Select unit				
		Select unit				
		Select unit				

01'#\$\*\*\$2%B \$  
4 %5, "##' \$ \$ #-\$

OUTPUT SUMMARY (Only ChemTRAC priority substances)

ChemTRAC Priority Substances	Quantity (kg/yr)			
	Manufactured <sup>1</sup>	Processed <sup>1</sup>	Otherwise Used <sup>1</sup>	Released to Air <sup>1</sup>
Particulate Matter (PM2.5)	0	0	0	0

<sup>1</sup>Definitions available in References tab

!"#\$%&'()\*+,-./:;<=>?@A B C D E F G H I J K L M N O P Q R S T U V W X Y Z [ \ ] ^ \_ ` a b c d e f g h i j k l m n o p q r s t u v w x y z 0 1 2 3 4 5 6 7 8 9

For Collector 1, the airflow rate of “1200” is entered into the yellow box.

The unit of “cfm” is selected from the dropdown menu.

“1” is entered as the number of dust collectors.

The operating schedule of “12” hours per day, “6” days per week, and “50” weeks per year is entered into the appropriate yellow boxes.

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	1,200	cfm	2	12	6	52
Collector 1	1,200	cfm	1	12	6	50
		Select unit				

### Reading the Output table

The Output table displays the quantities of ChemTRAC substances that are manufactured, processed, released, or otherwise used in your facility. These values are the results of all of the calculations based on the information entered in the Input-Output Screen. The Output table below is the result of the sample information entered in Worksheet 1.

You should compare the values that are manufactured, processed or otherwise used to the ChemTRAC reporting thresholds to see if you are required to report ChemTRAC substances. See Interpreting Results on page 11 for more details.

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

OUTPUT SUMMARY (Only ChemTRAC priority substances)				
ChemTRAC Priority Substances	Quantity (kg/yr)			
	Manufactured <sup>1</sup>	Processed <sup>1</sup>	Otherwise Used <sup>1</sup>	Released to Air <sup>1</sup>
Particulate Matter (PM2.5)	0	0	0	147

Definitions available on the References tab

## 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.<sup>3</sup> 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 Seasoning and dressing manufacturers 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 1.

Table 1. 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?
Particulate Matter (PM <sub>2.5</sub> )	0.0	0.0	0.0	147	30	YES

**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 1 example, PM<sub>2.5</sub> is greater than the reporting threshold. Therefore, in this example, the release of PM<sub>2.5</sub> to air would need to be reported to the ChemTRAC program.

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

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## Reporting to ChemTRAC

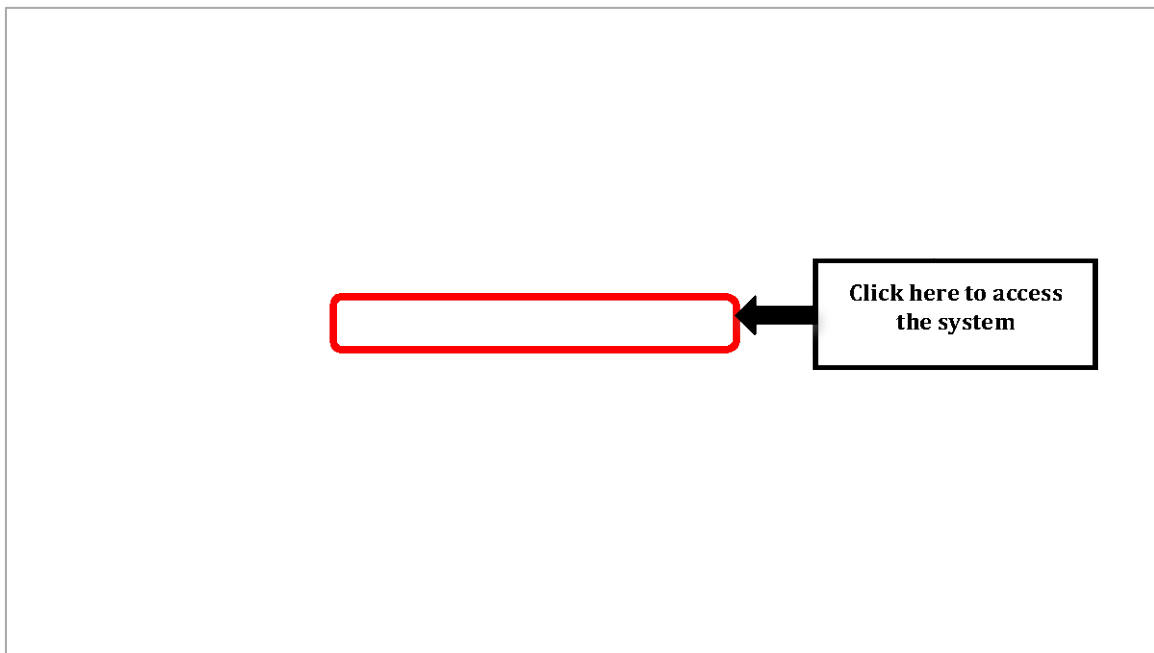
**You are only required to report to ChemTRAC if you meet or exceed reporting thresholds for one or more priority substances.**

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).



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

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[Contact us](#)  
[Terms of use](#)  
[User Guide](#)

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.

TORONTO

ChemTRAC

You are in a secure site.

Frequently asked questions  
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User Guide

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 seasoning and dressing manufacturers, this will be “31 – Manufacturing”. Then, you can select the appropriate 4-digit code (3119), and finally, the 6 digit code (311940).

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

NAICS 2-Digit:	31 - Manufacturing
NAICS 4-Digit:	3119 - Other Food Mfg.
NAICS 6-Digit:	311940 - Seasoning & Dressing Mfg.

### 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 1 in this guide. Recall that Particulate Matter 2.5 was the only substance that exceeded thresholds.

<input type="checkbox"/>	75-01-4	Vinyl chloride
<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 seasoning and dressing manufacturers,  $PM_{2.5}$  are “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.

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

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

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

The example below illustrates how to complete Step 4 for Particulate Matter 2.5 using information from Table 1 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: ⓘ 147	ChemTRAC calculator
Processed: ⓘ	- Select Estimation Method From List -
Otherwise Used: ⓘ	- Select Estimation Method From List -
<b>Total Use:</b> 147	
Release to Air: ⓘ 147	ChemTRAC calculator
Release to Land: ⓘ	- Select Estimation Method From List -
Release to Surface Water: ⓘ	- Select Estimation Method From List -
<b>Total Release:</b> 147	

### 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 Part 2 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 your facility's environmental impact

### 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, processes 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 the 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 the information you need 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 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 collection equipment in good operating condition and change filters regularly. Well-maintained equipment lasts longer and reduces emissions.*

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 appropriately sized dust collection systems to capture particulate matter.*

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 seasoning and dressing manufacturers. Control technologies can be used to help reduce emissions of ChemTRAC substances.

#### *Mixing process control technologies: Dust collectors*

Recall that particulate matter (PM<sub>2.5</sub>) in the form of flour, sugar, salt, or other powdery material, is released into the air during the 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<sub>2.5</sub> that is released during the mixing of dry materials. A dust collector takes in air with a high abundance of PM<sub>2.5</sub>, collects much of the PM<sub>2.5</sub> within filter bags, and releases the air with a reduced amount of PM<sub>2.5</sub>. No matter what amount of PM<sub>2.5</sub> is entering the dust collector, the dust collector can reduce PM<sub>2.5</sub> quantities down to about one particle per three 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. Facilities can also take other steps to improve their economic and environmental sustainability.

1. **Reduce energy use.** By reducing energy use, manufacturers 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
- Purchasing a heat exchanger system to recycle wasted oven heat.

2. **Reduce water use.** Working to reduce water use can save money and provide environmental benefits. Manufacturers can do a number of things to reduce water use.

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

- Sweeping floors and machines instead of hosing them down with water
- Posting signs near sinks and hoses to encourage employees to use less water
- Purchasing high pressure, low volume cleaning equipment. High-pressure washers cost about \$200 and can generate savings of over \$1,000 per year<sup>4</sup>
- Purchasing water sprayers with automatic shut-off nozzles.

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<sup>4</sup> North Carolina Cooperative Extension Service, Water Quality and Waste Management, Liquid Assets for Your Facility, <http://www.p2pays.org/ref/01/00029.htm>

### 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:

1. Evaluating actions to reduce use and release of energy, water and ChemTRAC substances.
2. Identifying funding for upgrades to facilities and equipment.
3. Implementing all cost-effective upgrades.
4. 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](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 seasoning and dressing manufacturers include:

- Dalhousie University. 2008. Fact Sheet: Eco-Efficiency in the Food Processing Industry. [http://eco-efficiency.management.dal.ca/Files/Business\\_Fact\\_Sheets/food\\_processing\\_fs.pdf](http://eco-efficiency.management.dal.ca/Files/Business_Fact_Sheets/food_processing_fs.pdf)
- New York State Department of Environmental Conservation. March 2001. Environmental Self-Assessment for the Food Processing Industry. <http://www.fpeac.org/poultry/EnvironmentalSelfAssessmentforFoodProcessingIndustry.pdf>
- North Carolina Cooperative Extension Service, Water Quality and Waste Management, Liquid Assets for Your Bakery. [www.p2pays.org/ref/01/00029.htm](http://www.p2pays.org/ref/01/00029.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](http://www.toronto.ca/health/chemtrac/pdf/GreenFoodBev.pdf)
- UNIDO. Pollution from food processing factories and environmental protection. [http://www.unido.org/fileadmin/import/32129\\_25PollutionfromFoodProcessing.7.pdf](http://www.unido.org/fileadmin/import/32129_25PollutionfromFoodProcessing.7.pdf)
- US EPA. 2002. Practical Guide to Environmental Management for Small Businesses. [http://www.smallbiz-enviroweb.org/Resources/smallbizfiles/EM\\_Guide0902.pdf](http://www.smallbiz-enviroweb.org/Resources/smallbizfiles/EM_Guide0902.pdf)



### Appendices

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

**Appendix A. Printer-friendly versions of the worksheet.**

**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 Seasoning and dressing manufacturers with emissions data from other sources.*

## Appendix A. Printer-friendly worksheets

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

### Worksheet 1 – Dust collectors (for dry ingredient mixing)

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

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
Collector 1	1200	X cfm (cubic feet per minute) OR <input type="checkbox"/> m <sup>3</sup> /s (cubic metres per second)	1	12	6	50
Etc.						

## Appendix B. Additional material related to the ChemTRAC calculator

This appendix describes the remaining 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. It also lists details on the emission factors used to calculate the release of substances and an indication of emission factor data quality. 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 dust collectors can be modified if site-specific information is available. All other data, sample calculations and information presented in the Calculations screen are for reference only. They should not be modified in any way.

If emission factors are modified, be sure that they are entered in the appropriate units. Modifying emission factors in this table can modify the calculation of PM<sub>2.5</sub> released from dry ingredient receiving, conveying, and mixing.

## CHEMTRAC

### Calculations

Version 3 Last Updated: October 25, 2011 by Y S, JA, & ZI

**Instructions**

• 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.

**Input-Output**

• 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.



**Calculations**

ChemTRAC Priority Substances	CAS #	Quantity (kg/yr)			
		Manufactured	Processed	Otherwise Used	Released to Air
Particulate Matter (PM2.5)	n/a	0	0	0	147

**References**

**Process Flow**

Dust Collector ID	Air flow rate	Units	Units Code	# of Units	Operating Schedule			Emission Factor (mg/m <sup>3</sup> )	Emission Rate (kg/yr)
					hours/day	days/week	weeks/year		
Collector 1	1200	cfm	2	1	12	6	50	20	146.79
	0	Select Units	1	0	0	0	0	20	0.00
	0	Select Units	1	0	0	0	0	20	0.00
	0	Select Units	1	0	0	0	0	20	0.00
	0	Select Units	1	0	0	0	0	20	0.00
<b>Total</b>									146.79

**Sample Calculations:**

$$\begin{aligned}
 \text{PM}_{2.5} \text{ Emission Rate} &= \text{Air flowrate (m}^3/\text{s)} \times \# \text{ of units} \times 3600 \text{ s/h} \times \text{Operating Schedule (h/d} \times \text{d/w} \times \text{w/y)} \times \text{Emission Factor (mg/m}^3) / 1000000 \text{ mg/kg} \\
 &= 1200 \text{ cfm} / 2118.88 \text{ cfm/m}^3 \times 12 \text{ h/d} \times 6 \text{ d/w} \times 50 \text{ w/y} \times 20 \text{ mg/m}^3 / 1000000 \text{ mg/kg} \times 3600 \text{ s/hr} \times 1 \text{ units} \\
 &= 146.79 \text{ kg/yr}
 \end{aligned}$$

## Additional Material

### The ChemTRAC calculator References screen

The Reference screen describes from where the emission factors 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.

**CHEMTRAC**  
References  
Version 3 Last Updated: October 25, 2011 by YS, JA, & ZI

**Instructions**

**Input-Output**

**Calculations**

**References**

**Process Flow**

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.

Dust collector emission factors are provided in the Ontario Ministry of the Environment publication "Procedure for Preparing and ESDM Report" EIBS #3614e03, March 2009  
<http://www.ene.gov.on.ca/envision/gp/3614e03.pdf>

**Definitions<sup>1</sup>**

**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.

<sup>1</sup> For details refer to the Environmental Reporting and Disclosure Bylaw available at the [ChemTRAC website](#).

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### The ChemTRAC calculator Process Flow screen

The Process Flow screen provides a diagram that shows examples of the steps that could be involved in seasoning and dressing manufacturers, 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 releases at steps that have not been identified in the diagram. You do not need to enter any information on this screen.

## Additional Material

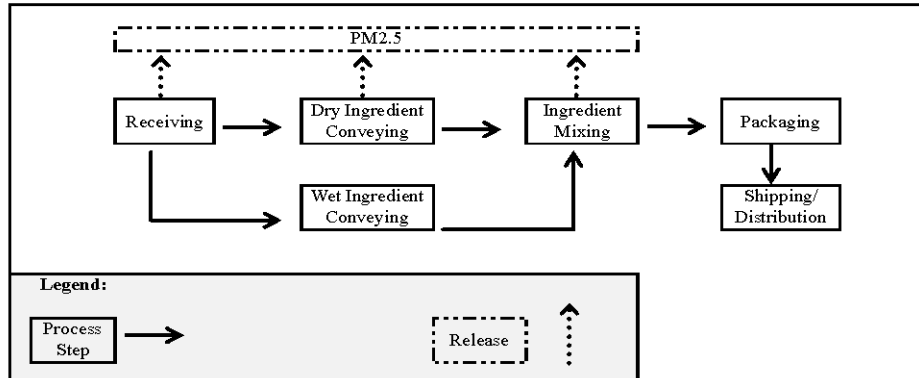
# CHEMTRAC

### Process Flow

Version 3 Last Updated: October 25, 2011 by YS, JA, & ZI

- This page provides a process flow diagram that shows examples of the steps that could be involved in seasoning and dressing manufacturing, and identifies process steps where ChemTRAC priority substances could be manufactured, processed, otherwise used and released.
- Not all facilities will follow all of these steps in this exact order.
- Not all facilities will have contaminant releases at the process steps identified, and some may have contaminant releases at steps which have not been identified in this diagram.

- Instructions
- Input-Output
- Calculations
- References
- You are here** → Process Flow



## Additional Material

### *Emission factors for seasoning and dressing manufacturers*

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. particulate matter) emitted by a specific activity (e.g. processing one cubic metre of air through a dust collector).

The ChemTRAC calculator uses the emission factor listed in Table 2 to estimate emissions from seasoning and dressing manufacturers. If site-specific emission factors are available for the facility or processes, they can be entered in the Calculations sheet of the calculator. This is detailed in the discussion of the calculator’s Calculations screen.

**Table 2. Emission factor for PM<sub>2.5</sub>**

Source	Substance	Emission Factor
Dust collectors	Particulate matter (PM <sub>2.5</sub> )	20 mg/m <sup>3</sup>

#### Example: Using emission factors to estimate PM<sub>2.5</sub> emissions from dust collectors

In Part 1, we use a sample dust collector with an airflow rate of 1200 cubic feet per minute (cfm). This amounts to an airflow rate of 0.566 cubic metres per second (cms).

The dust collector is in operation 12 hours per day, 6 days per week, 50 weeks per year. This amounts to 12,960,000 seconds of operation per year.

The emissions factor for dust collection of 20 mg per m<sup>3</sup> amounts to 0.00002 kg per m<sup>3</sup>.

#### **Total emissions of PM<sub>2.5</sub> for 2011 from dust collection**

$$\begin{aligned} &= \text{Flow (m}^3 \text{ per second)} * \text{Seconds of operation} * \text{Emissions factor (kg per m}^3\text{)} \\ &= \mathbf{0.566 \text{ m}^3 \text{ per second} * 12,960,000 \text{ seconds per year} * 0.00002 \text{ kg per m}^3} \\ &= \mathbf{147 \text{ kg of PM}_{2.5}} \end{aligned}$$

## Appendix C. Combining the Seasoning and Dressing Manufacturing 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.<sup>5</sup> 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.

**CHEMTRAC**  
Calculation of Totals  
Last Update: October 21, 2011 by YS, IA & ZI

**Instructions**

- The 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" column, 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](http://www.toronto.ca/chemtrac). The definitions are provided in the Example 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.

**Calculation**

**Example**

**ChemTRAC**

Chemical	Process#1				Process#2				Total Manufactured (kg/yr)	Total Processed (kg/yr)	Total Otherwise Used (kg/yr)	Total Released to Air (kg/yr)			
	Manufactured	Processed	Otherwise Used	Released to Air	Manufactured	Processed	Otherwise Used	Released to Air							
Acetaldehyde*									0	100	No	---	---	---	---
Acrolein*									0	100	No	---	---	---	---
Benzene*									0	100	No	---	---	---	---
1,2-Ethanedithiol*									0	100	No	---	---	---	---
Carbon tetrachloride*									0	100	No	---	---	---	---
Chloroform (Trichloromethane)*									0	100	No	---	---	---	---
Chromium (non-hexavalent) <sup>1</sup>									0	100	No	---	---	---	---
1,2-Dibromoethane (Ethylene dibromide)									0	100	No	---	---	---	---
1,4-Dichlorobenzene*									0	100	No	---	---	---	---
1,2-Dichloroethane (Ethylene dichloride)*									0	100	No	---	---	---	---
Dichloromethane (Methylene chloride)									0	100	No	---	---	---	---
Formaldehyde*									0	100	No	---	---	---	---
Manganese <sup>2</sup>									0	10	No	---	---	---	---
Nickel <sup>3</sup>									0	100	No	---	---	---	---
Perchloroethylene (Perchloroethylene)									0	100	No	---	---	---	---
Tetrachloroethylene*									0	100	No	---	---	---	---
Vinyl chloride									0	100	No	---	---	---	---
Cadmium <sup>4</sup>									0	1	No	---	---	---	---
Chromium (hexavalent) <sup>1</sup>									0	10	No	---	---	---	---
Lead <sup>5</sup>									0	10	No	---	---	---	---
Mercury <sup>6</sup>									0	1	No	---	---	---	---
Total polycyclic aromatic hydrocarbons (PAHs)*									0	10	No	---	---	---	---
Nitrogen oxides (NOx)									0	10	No	---	---	---	---
Particulate matter 2.5 (PM2.5)									0	200	No	---	---	---	---
Total Volatile organic compounds (VOCs)*									0	30	No	---	---	---	---
									0	100	No	---	---	---	---

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

The total combined release of substances (whether from the ChemTRAC Seasoning and dressing manufacturing 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 3 on the following page.

<sup>5</sup> The Calculation of Totals calculator can be found under the Totals bullet at <http://www.toronto.ca/health/chemtrac/tools.htm>.

## Additional Material

**Table 3. 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 <sup>c</sup> % 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 <sub>x</sub> )	200	N/A
Particulate Matter 2.5 (PM <sub>2.5</sub> )	30	N/A
Polycyclic Aromatic Hydrocarbons (PAHs)	10	N/A <sup>b</sup>
Tetrachloroethylene (Perchloroethylene)	100	1
Trichloroethylene	100	1
Vinyl chloride	100	1
Volatile Organic Compounds (VOCs) total	100	N/A

Notes:

- a. N/A = not applicable
- b. The concentration threshold % w/w is not relevant to the emissions quantified using the ChemTRAC calculator for Seasoning and dressing manufacturers



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## 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](http://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 Tetrachloride	Chloroform
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.