

Guide to calculations for ChemTRAC reporting:

Auto Body, Collision Repair, and Auto Refinishing Sector

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 information about your facility, use the ChemTRAC calculator for auto body work, collision repair, and auto refinishing, and report 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

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 6 on page 96.

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. Wood office furniture manufacturers are covered by this bylaw.

This guide is designed to help you and other wood office furniture manufacturer 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 Auto Body, Collision Repair, and Auto Refinishing sector

The North American Industrial Classification System (NAICS) codes 811121 – 811122 include all establishments that engage in automotive body, paint, interior, and glass repair and maintenance.

Auto body 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 auto body refinishing facilities

Table 1 lists the typical processes used in an auto body facility. Most facilities will use vehicle coatings including sealers, binders, primers, paints, as well as conduct welding and sanding, as part of the automotive refinishing process. Some facilities may also use natural gas combustion to heat their spray booths.

Table 1 also shows the ChemTRAC priority substances that are released in a typical auto body facility.

ChemTRAC calculators can help you estimate the level of these substances in your business. The ChemTRAC calculator for automotive refinishing will enable you to estimate your use and release of priority substances from sanding and applying surface coatings. The ChemTRAC calculators for Electric Arc Welding will help you estimate your use and release of priority substances from welding. The ChemTRAC calculator for Natural Gas Boilers will help you estimate your use and release of priority substances from heating your spray booth.

Table 1. ChemTRAC substances released in a typical auto body facility and their sources

ChemTRAC priority substances	Refinishing Process			Auxiliary Equipment
	Welding	Sanding	Surface coating	Natural gas heating for spray booth
Benzene				X
Cadmium and its compounds				X
Chromium and its compounds	X			X
Chromium, hexavalent and its compounds	X			
Formaldehyde				X
Lead and its compounds	X			X
Manganese and its compounds	X			X
Mercury and its compounds				X
Nickel and its compounds	X			X
Nitrogen Oxides				X
PM _{2.5}	X	X		X
PAHs				X
VOCs			X	X

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

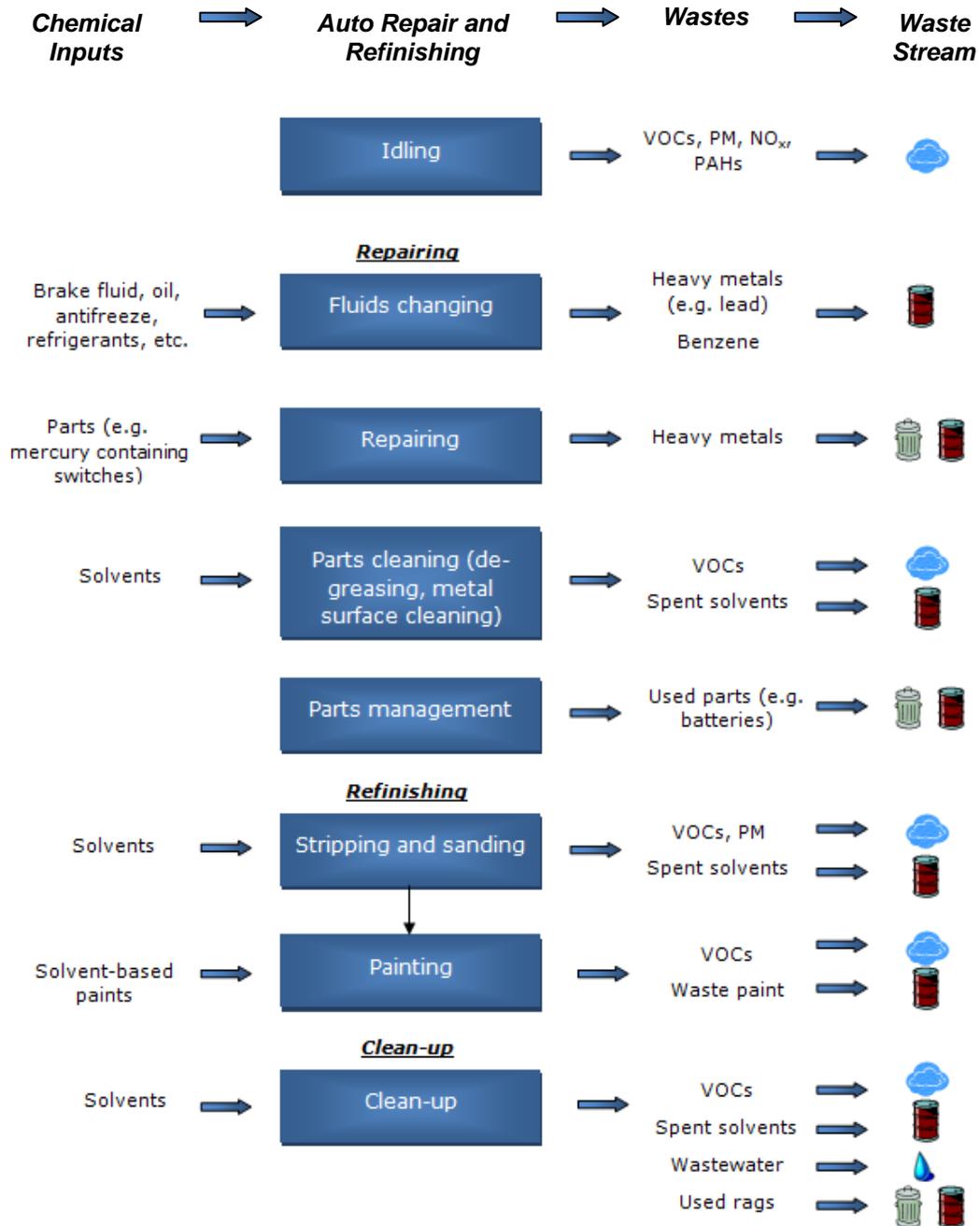
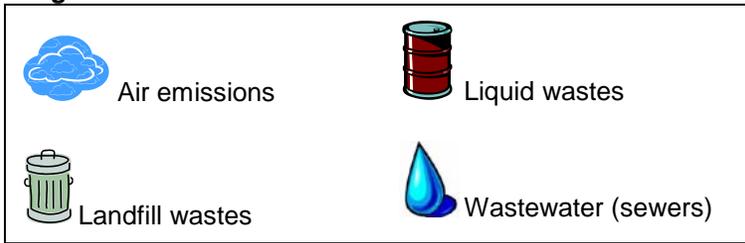
Most of the substances listed in Table 1 are released in very small amounts. It is likely that only PM_{2.5}, VOCs and NO_x would be released in amounts that could require reporting to the ChemTRAC program.

A detailed flow diagram of the chemical inputs and associated wastes from automotive refinishing is provided on the next page. Symbols show whether the wastes typically go to air, landfill, sewer systems and/or treatment facilities (liquid wastes).

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

Automobile Repair and Refinishing: Chemical Inputs and Associated Wastes

Legend



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

Particulate Matter 2.5 (PM_{2.5}). The term Particulate matter (PM) is used to describe solid and liquid particles found in the air we breathe. These particles are composed of acid aerosols, organic chemicals, smoke, metal fumes, fly ash, dust and pollen. PM that is smaller than 2.5 microns in diameter is called PM_{2.5}. In an auto body refinishing facility, PM_{2.5} is released into the air during the sanding of automotive parts and by paint spray guns.

Volatile Organic Substances (VOCs). VOCs are a group of organic chemicals that easily evaporate into the air from their direct use, from products containing them, or as a by-product of industrial processes. VOCs react with other pollutants to create ozone, a major contributor to smog. You can often smell VOCs. In an auto body refinishing facility VOCs are typically released during automotive coating processes from products including paints and adhesives.

Combustion by-products from natural gas burners. When natural gas is combusted to heat spray booths, it releases ChemTRAC priority substances such as NO_x, VOCs, and PM_{2.5}. NO_x is the term used to describe a category of chemicals known as nitrogen oxides. Nitrogen dioxide, NO₂, was identified as one of five common air pollutants of significant health concern that contributes to the burden of illness from air pollution in Toronto.

The health effects of PM_{2.5}, VOCs and NO_x

PM_{2.5}. PM_{2.5} leads primarily to irritation of the eyes, throat and lungs. These particles may worsen the condition of those individuals who are afflicted by respiratory conditions, such as asthma, bronchitis, or lung disease, and also affects those with pre-existing cardiovascular disease. Children and the elderly have an increased sensitivity to PM. Particles may also reduce an individual's capacity to combat infection.

VOCs. VOCs react with other pollutants to create ozone, a major contributor to smog. Ozone has been associated with acute symptoms like coughing and wheezing as well as more chronic conditions such as asthma and chronic obstructive pulmonary disease (COPD), which includes chronic bronchitis and emphysema. While VOCs can act as precursors of smog, they can also be toxic and impact directly on human health. People who chronically breathe air contaminated with VOCs may experience an increased risk of cardiovascular and respiratory problems.

NO_x. Individuals are exposed by inhaling air that contains NO₂. NO₂ affects mainly the respiratory system. Exposure leads to a decrease in the lungs' ability to fight infection. Nitrogen dioxide concentrations are associated with daily mortality and hospital admissions as a result of respiratory disease. People with asthma and bronchitis, young children and adults with heart and respiratory disorders are especially sensitive to NO₂ exposure.

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 calculators that are applicable for the auto body, collision repair, and auto refinishing sector from the ChemTRAC website at <http://www.toronto.ca/health/chemtrac/industries/autobody.htm>

These calculators help businesses do three things:

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

Appendix B describes how the calculators estimate 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. For a list of alternative methods, see <http://www.toronto.ca/health/chemtrac/>

In the next section, we will work through worksheets to prepare you to use the ChemTRAC calculator for auto body refinishing.

Worksheets for collecting information

The worksheets found on the next pages are intended to help you collect all the information needed to use the ChemTRAC calculator for auto body refinishing. Five worksheets are provided:

- *Worksheet 1* – Vehicle coatings
- *Worksheet 2* – Products used for cleaning
- *Worksheet 3* – Other chemical usage
- *Worksheet 4* – Sanding
- *Worksheet 5* – Transferred materials

A printer-friendly version of these worksheets can be found as Appendix A. These worksheets 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 auto body refinishing, such as welding and spray booth heating, 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 auto body refinishing. 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 details.

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

Worksheet 1 – Vehicle coatings

This worksheet will help you collect information about the coatings applied in your facility. By completing the Tables in Worksheet 1, you will have all the information you need to fill in the "Paint Usage" spreadsheet of the auto body calculator. You should collect data about your facility for the period from January 1 to December 31 of a calendar year.

1. What types of coatings do you use?

The auto body calculator asks you to choose the **type** of each coating from the categories listed in [Worksheet 1 – Table 1](#) on the next page. You can find this information on the container of each product and use an 'X' to fill in the table below.

- **Solvent-based paints** include oil-based, enamel, and alkyd products.
- **Water-based paints** include acrylic and latex products.

2. How much of each product do you use?

You can estimate how much of each product you used last year by multiplying the number of containers you use each year by the volume of each container in litres. Enter this data into [Worksheet 1 – Table 1](#) on the next page. If it is easier, you can start by estimating the number of containers you purchase each week or month.

Example: $\underline{100}$ containers per year * $\underline{1}$ litre per container
= 100 litres per year

Data is input to the ChemTRAC calculator in the units of litres (L). You can also collect this information in the units:

- gallons (US)
- gallons (UK)
- cubic metres (m³)
- quarts (US)
- Ounces (US)
- milliliters (mL)

You can then use the conversion tool in the ChemTRAC calculator to enter the volume in litres (L).

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

Worksheet 1 – Table 1. Select the coating product and type. Input the quantity used last year.

Coating product	Product type	Containers per year	Size of container	Units	Quantity used
<input checked="" type="checkbox"/> Example: Primer Surfacer	<input checked="" type="checkbox"/> Waster-based/ Low-VOC	<u>100</u>	<u>1</u>	<input checked="" type="checkbox"/> litres (L)	<u>100</u>
<input type="checkbox"/> Primer Surfacer	<input type="checkbox"/> Waster-based/ Low-VOC <input type="checkbox"/> Solvent -based	_____	_____	<input type="checkbox"/> gallons (US) <input type="checkbox"/> gallons (UK) <input type="checkbox"/> cubic metres (m ³) <input type="checkbox"/> quarts (US) <input type="checkbox"/> ounces (US) <input type="checkbox"/> litres (L) <input type="checkbox"/> milliliters (mL)	_____
<input type="checkbox"/> Primer Surfacer	<input type="checkbox"/> Waster-based/ Low-VOC <input type="checkbox"/> Solvent -based	_____	_____	<input type="checkbox"/> gallons (US) <input type="checkbox"/> gallons (UK) <input type="checkbox"/> cubic metres (m ³) <input type="checkbox"/> quarts (US) <input type="checkbox"/> ounces (US) <input type="checkbox"/> litres (L) <input type="checkbox"/> milliliters (mL)	_____
<input type="checkbox"/> Primer Sealer	<input type="checkbox"/> Waster-based/ Low-VOC <input type="checkbox"/> Solvent -based	_____	_____	<input type="checkbox"/> gallons (US) <input type="checkbox"/> gallons (UK) <input type="checkbox"/> cubic metres (m ³) <input type="checkbox"/> quarts (US) <input type="checkbox"/> ounces (US) <input type="checkbox"/> litres (L) <input type="checkbox"/> milliliters (mL)	_____
<input type="checkbox"/> Primer Sealer	<input type="checkbox"/> Waster-based/ Low-VOC <input type="checkbox"/> Solvent -based	_____	_____	<input type="checkbox"/> gallons (US) <input type="checkbox"/> gallons (UK) <input type="checkbox"/> cubic metres (m ³) <input type="checkbox"/> quarts (US) <input type="checkbox"/> ounces (US) <input type="checkbox"/> litres (L) <input type="checkbox"/> milliliters (mL)	_____

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

Worksheet 1 – Table 1 (Continued). Select the coating product and type. Input the quantity used last year.

Coating product	Product type	Containers per year	Size of container	Units	Quantity used
<input type="checkbox"/> Epoxy Primer (Part A)	<input type="checkbox"/> Water-based/ Low-VOC <input type="checkbox"/> Solvent-based	_____	_____	<input type="checkbox"/> gallons (US) <input type="checkbox"/> gallons (UK) <input type="checkbox"/> cubic metres (m ³) <input type="checkbox"/> quarts (US) <input type="checkbox"/> ounces (US) <input type="checkbox"/> litres (L) <input type="checkbox"/> milliliters (mL)	_____
<input type="checkbox"/> Epoxy Primer (Part A)	<input type="checkbox"/> Water-based/ Low-VOC <input type="checkbox"/> Solvent-based	_____	_____	<input type="checkbox"/> gallons (US) <input type="checkbox"/> gallons (UK) <input type="checkbox"/> cubic metres (m ³) <input type="checkbox"/> quarts (US) <input type="checkbox"/> ounces (US) <input type="checkbox"/> litres (L) <input type="checkbox"/> milliliters (mL)	_____
<input type="checkbox"/> Epoxy Primer (Catalyst/ Activator)	<input type="checkbox"/> Water-based/ Low-VOC <input type="checkbox"/> Solvent-based	_____	_____	<input type="checkbox"/> gallons (US) <input type="checkbox"/> gallons (UK) <input type="checkbox"/> cubic metres (m ³) <input type="checkbox"/> quarts (US) <input type="checkbox"/> ounces (US) <input type="checkbox"/> litres (L) <input type="checkbox"/> milliliters (mL)	_____
<input type="checkbox"/> Epoxy Primer (Catalyst/ Activator)	<input type="checkbox"/> Water-based/ Low-VOC <input type="checkbox"/> Solvent-based	_____	_____	<input type="checkbox"/> gallons (US) <input type="checkbox"/> gallons (UK) <input type="checkbox"/> cubic metres (m ³) <input type="checkbox"/> quarts (US) <input type="checkbox"/> ounces (US) <input type="checkbox"/> litres (L) <input type="checkbox"/> milliliters (mL)	_____
<input type="checkbox"/> Pre-Treatment Wash Primer	N/A	_____	_____	<input type="checkbox"/> gallons (US) <input type="checkbox"/> gallons (UK) <input type="checkbox"/> cubic metres (m ³) <input type="checkbox"/> quarts (US) <input type="checkbox"/> ounces (US) <input type="checkbox"/> litres (L) <input type="checkbox"/> milliliters (mL)	_____

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

Worksheet 1 – Table 1 (Continued). Select the coating product and type. Input the quantity used last year.

Coating product	Product type	Containers per year	Size of container	Units	Quantity used
<input type="checkbox"/> Adhesion Promoter	N/A	_____	_____	<input type="checkbox"/> gallons (US) <input type="checkbox"/> gallons (UK) <input type="checkbox"/> cubic metres (m ³) <input type="checkbox"/> quarts (US) <input type="checkbox"/> ounces (US) <input type="checkbox"/> litres (L) <input type="checkbox"/> milliliters (mL)	_____
<input type="checkbox"/> Colour Coating	<input type="checkbox"/> Water-based/ Low-VOC <input type="checkbox"/> Solvent-based	_____	_____	<input type="checkbox"/> gallons (US) <input type="checkbox"/> gallons (UK) <input type="checkbox"/> cubic metres (m ³) <input type="checkbox"/> quarts (US) <input type="checkbox"/> ounces (US) <input type="checkbox"/> litres (L) <input type="checkbox"/> milliliters (mL)	_____
<input type="checkbox"/> Colour Coating	<input type="checkbox"/> Water-based/ Low-VOC <input type="checkbox"/> Solvent-based	_____	_____	<input type="checkbox"/> gallons (US) <input type="checkbox"/> gallons (UK) <input type="checkbox"/> cubic metres (m ³) <input type="checkbox"/> quarts (US) <input type="checkbox"/> ounces (US) <input type="checkbox"/> litres (L) <input type="checkbox"/> milliliters (mL)	_____
<input type="checkbox"/> Truck Bed Liner Coating	N/A	_____	_____	<input type="checkbox"/> gallons (US) <input type="checkbox"/> gallons (UK) <input type="checkbox"/> cubic metres (m ³) <input type="checkbox"/> quarts (US) <input type="checkbox"/> ounces (US) <input type="checkbox"/> litres (L) <input type="checkbox"/> milliliters (mL)	_____
<input type="checkbox"/> Temporary Protective Coating	<input type="checkbox"/> Water-based/ Low-VOC <input type="checkbox"/> Solvent-based	_____	_____	<input type="checkbox"/> gallons (US) <input type="checkbox"/> gallons (UK) <input type="checkbox"/> cubic metres (m ³) <input type="checkbox"/> quarts (US) <input type="checkbox"/> ounces (US) <input type="checkbox"/> litres (L) <input type="checkbox"/> milliliters (mL)	_____

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

Worksheet 1 – Table 1 (Continued). Select the coating product and type. Input the quantity used last year.

Coating product	Product type	Containers per year	Size of container	Units	Quantity used
<input type="checkbox"/> Temporary Protective Coating	<input type="checkbox"/> Water-based/ Low-VOC <input type="checkbox"/> Solvent-based	_____	_____	<input type="checkbox"/> gallons (US) <input type="checkbox"/> gallons (UK) <input type="checkbox"/> cubic metres (m ³) <input type="checkbox"/> quarts (US) <input type="checkbox"/> ounces (US) <input type="checkbox"/> litres (L) <input type="checkbox"/> milliliters (mL)	_____
<input type="checkbox"/> Underbody Coating	N/A	_____	_____	<input type="checkbox"/> gallons (US) <input type="checkbox"/> gallons (UK) <input type="checkbox"/> cubic metres (m ³) <input type="checkbox"/> quarts (US) <input type="checkbox"/> ounces (US) <input type="checkbox"/> litres (L) <input type="checkbox"/> milliliters (mL)	_____
<input type="checkbox"/> Single-Stage Coating	<input type="checkbox"/> Water-based/ Low-VOC <input type="checkbox"/> Solvent-based	_____	_____	<input type="checkbox"/> gallons (US) <input type="checkbox"/> gallons (UK) <input type="checkbox"/> cubic metres (m ³) <input type="checkbox"/> quarts (US) <input type="checkbox"/> ounces (US) <input type="checkbox"/> litres (L) <input type="checkbox"/> milliliters (mL)	_____
<input type="checkbox"/> Single-Stage Coating	N/A	_____	_____	<input type="checkbox"/> gallons (US) <input type="checkbox"/> gallons (UK) <input type="checkbox"/> cubic metres (m ³) <input type="checkbox"/> quarts (US) <input type="checkbox"/> ounces (US) <input type="checkbox"/> litres (L) <input type="checkbox"/> milliliters (mL)	_____
<input type="checkbox"/> Clear Coating	<input type="checkbox"/> Water-based/ Low-VOC <input type="checkbox"/> Solvent-based	_____	_____	<input type="checkbox"/> gallons (US) <input type="checkbox"/> gallons (UK) <input type="checkbox"/> cubic metres (m ³) <input type="checkbox"/> quarts (US) <input type="checkbox"/> ounces (US) <input type="checkbox"/> litres (L) <input type="checkbox"/> milliliters (mL)	_____

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

Worksheet 1 – Table 1 (Continued). Select the coating product and type. Input the quantity used last year.

Coating product	Product type	Containers per year	Size of container	Units	Quantity used
<input type="checkbox"/> Clear Coating	<input type="checkbox"/> Water-based/ Low-VOC <input type="checkbox"/> Solvent-based	_____	_____	<input type="checkbox"/> gallons (US) <input type="checkbox"/> gallons (UK) <input type="checkbox"/> cubic metres (m ³) <input type="checkbox"/> quarts (US) <input type="checkbox"/> ounces (US) <input type="checkbox"/> litres (L) <input type="checkbox"/> milliliters (mL)	_____
<input type="checkbox"/> Clear Coat Hardener (Catalyst)	N/A	_____	_____	<input type="checkbox"/> gallons (US) <input type="checkbox"/> gallons (UK) <input type="checkbox"/> cubic metres (m ³) <input type="checkbox"/> quarts (US) <input type="checkbox"/> ounces (US) <input type="checkbox"/> litres (L) <input type="checkbox"/> milliliters (mL)	_____
<input type="checkbox"/> Clear Coat Hardener (Catalyst)	<input type="checkbox"/> Water-based/ Low-VOC <input type="checkbox"/> Solvent-based	_____	_____	<input type="checkbox"/> gallons (US) <input type="checkbox"/> gallons (UK) <input type="checkbox"/> cubic metres (m ³) <input type="checkbox"/> quarts (US) <input type="checkbox"/> ounces (US) <input type="checkbox"/> litres (L) <input type="checkbox"/> milliliters (mL)	_____
<input type="checkbox"/> Clear Coat Reducer	N/A	_____	_____	<input type="checkbox"/> gallons (US) <input type="checkbox"/> gallons (UK) <input type="checkbox"/> cubic metres (m ³) <input type="checkbox"/> quarts (US) <input type="checkbox"/> ounces (US) <input type="checkbox"/> litres (L) <input type="checkbox"/> milliliters (mL)	_____
<input type="checkbox"/> Clear Coat Reducer	<input type="checkbox"/> Water-based/ Low-VOC <input type="checkbox"/> Solvent-based	_____	_____	<input type="checkbox"/> gallons (US) <input type="checkbox"/> gallons (UK) <input type="checkbox"/> cubic metres (m ³) <input type="checkbox"/> quarts (US) <input type="checkbox"/> ounces (US) <input type="checkbox"/> litres (L) <input type="checkbox"/> milliliters (mL)	_____

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

Worksheet 1 – Table 1 (Continued). Select the coating product and type. Input the quantity used last year.

Coating product	Product type	Containers per year	Size of container	Units	Quantity used
<input type="checkbox"/> Surface Cleaner	<input type="checkbox"/> Water-based/ Low-VOC <input type="checkbox"/> Solvent-based	_____	_____	<input type="checkbox"/> gallons (US) <input type="checkbox"/> gallons (UK) <input type="checkbox"/> cubic metres (m ³) <input type="checkbox"/> quarts (US) <input type="checkbox"/> ounces (US) <input type="checkbox"/> litres (L) <input type="checkbox"/> milliliters (mL)	_____
<input type="checkbox"/> Surface Cleaner	N/A	_____	_____	<input type="checkbox"/> gallons (US) <input type="checkbox"/> gallons (UK) <input type="checkbox"/> cubic metres (m ³) <input type="checkbox"/> quarts (US) <input type="checkbox"/> ounces (US) <input type="checkbox"/> litres (L) <input type="checkbox"/> milliliters (mL)	_____

3. Does your facility use shop towels?

Shop towels may be used in auto body shops to clean parts, spills, and leaks. Enter this quantity of shop towels used last year into [Worksheet 1 -Table 2](#).

[Worksheet 1 –Table 2](#). Input the quantity of shop towels used last year.

Shop towels used?	Quantity of shop towels used	Units
Example: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	_____ 10,000	<input checked="" type="checkbox"/> units <input type="checkbox"/> lbs <input type="checkbox"/> grams
<input type="checkbox"/> Yes <input type="checkbox"/> No	_____	<input type="checkbox"/> units <input type="checkbox"/> lbs <input type="checkbox"/> grams

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4. What is the control efficiency of your VOC emissions control equipment?

The control efficiency is the percentage of VOCs that the control equipment can reduce the emission of VOCs to air from a facility. Higher percentages indicate less emission of VOCs to air. For example, a regenerative thermal oxidizer can destroy 99% VOCs. Therefore, its control efficiency is 99% and hence the device will allow only (100-99) 1% emission of total VOCs generated. You can find this information in the product manual or by consulting your supplier.

Thermal oxidizers and catalytic oxidizers are examples of VOC emissions control equipment. See the *Control technologies for reducing emissions* section of this guide for more information on different types of control technologies.

Enter the control efficiencies for each product in [Worksheet 1 -Table 3](#). If you do not operate VOC emissions control equipment, then you should enter "0"%.

[Worksheet 1 –Table 3](#). Input the VOC control efficiency of your equipment.

Do you operate any VOC emission control equipment?	Efficiency (%)
Example: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<u> 90 </u> %
<input type="checkbox"/> Yes <input type="checkbox"/> No	<u> </u> %

Worksheet 2 – Products used for cleaning

This worksheet will help you collect information about the products used for cleaning in your facility. By completing the Tables in Worksheet 2, you will have all the information you need to fill in the "Cleaning" spreadsheet of the auto body calculator. You should collect data about your facility for the period from January 1 to December 31 of a calendar year.

Cleaning chemicals may contain VOCs, such as paint gun cleaners and automotive part degreasers. You will need to review each chemical's Material Safety Data Sheet (MSDS) to determine its VOC content. If the MSDS lists the VOC content range, then choose the midpoint. For example: if the VOC content is listed as 0.41 g/L - 0.63 g/L, then choose 0.52 g/L.

1. What is the quantity of each cleaning product used?

Enter the name of the cleaning product and quantity used in [Worksheet 2 – Table 1](#). If you reported Surface Cleaner data in [Worksheet 1 – Table 1](#), do not report it again here.

Data is input to the ChemTRAC calculator in the units of litres (L). You can also collect this information in the units:

- gallons (US)

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- gallons (UK)
- cubic metres (m³)
- quarts (US)
- Ounces (US)
- milliliters (mL)

You can then use the conversion tool in the ChemTRAC calculator to enter the volume in litres (L).

2. What is the VOC content of each cleaning product used?

Enter the VOC content of each cleaning product used in [Worksheet 2 -Table 1](#).

Data is input to the ChemTRAC calculator in the units of grams/litre (g/L). You can also collect this information in the units:

- lbs/gallon (US)
- % w/w and specific gravity (SG)

You can then use the conversion tool in the ChemTRAC calculator to enter the volume in grams/litre (g/L).

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Worksheet 2 –Table 1. Input the quantity and VOC content of cleaning products used at your facility

Cleaning Material	Volume used	Units	VOC Content from MSDS	Units
Example: <i>paint gun cleaner (concentrate)</i>	<u>7</u>	<input checked="" type="checkbox"/> litres (L)	<u>962</u>	<input checked="" type="checkbox"/> grams/ litre
_____	_____	<input type="checkbox"/> gallons (US) <input type="checkbox"/> gallons (UK) <input type="checkbox"/> cubic metres (m ³) <input type="checkbox"/> quarts (US) <input type="checkbox"/> ounces (US) <input type="checkbox"/> litres (L) <input type="checkbox"/> milliliters (mL)	_____	<input type="checkbox"/> lbs/gallon (US) <input type="checkbox"/> grams/ litre <input type="checkbox"/> % w/w and _____ Specific gravity (SG)
_____	_____	<input type="checkbox"/> gallons (US) <input type="checkbox"/> gallons (UK) <input type="checkbox"/> cubic metres (m ³) <input type="checkbox"/> quarts (US) <input type="checkbox"/> ounces (US) <input type="checkbox"/> litres (L) <input type="checkbox"/> milliliters (mL)	_____	<input type="checkbox"/> lbs/gallon (US) <input type="checkbox"/> grams/ litre <input type="checkbox"/> % w/w and _____ Specific gravity (SG)
_____	_____	<input type="checkbox"/> gallons (US) <input type="checkbox"/> gallons (UK) <input type="checkbox"/> cubic metres (m ³) <input type="checkbox"/> quarts (US) <input type="checkbox"/> ounces (US) <input type="checkbox"/> litres (L) <input type="checkbox"/> milliliters (mL)	_____	<input type="checkbox"/> lbs/gallon (US) <input type="checkbox"/> grams/ litre <input type="checkbox"/> % w/w and _____ Specific gravity (SG)

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

3. What is the quantity of cleaning products transferred offsite as waste?

Enter the name of the cleaning product, HWIN classification, offsite transfer company, and quantity transferred offsite as waste in [Worksheet 2 -Table 2](#). If you reported Surface Cleaner data in [Worksheet 1 – Table 1](#), do not report it again here.

Data is input to the ChemTRAC calculator in the units of litres (L). You can also collect this information in the units:

- gallons (US)
- gallons (UK)
- cubic metres (m³)
- quarts (US)
- Ounces (US)
- milliliters (mL)

You can then use the conversion tool in the ChemTRAC calculator to enter the volume in litres (L).

4. What is the VOC content of the transferred material?

Enter the VOC content of the transferred material in [Worksheet 2 -Table 2](#).

Data is input to the ChemTRAC calculator in the units of grams/litre (g/L). You can also collect this information in the units:

- lbs/gallon (US)
- % w/w and specific gravity (SG)

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

Worksheet 2 – Table 2. Input the name of the transferred cleaning material, HWIN classification, offsite transfer company, quantity of material transferred, and VOC content.

Transferred Material	HWIN Classification	Offsite Transfer Company	Volume Transferred	Units	VOC Content from MSDS	Units
Example: Automotive Surface Degreaser	<u>212 - Aliphatic Solvents</u>	<u>Environmental Solutions</u>	<u>150</u>	<input checked="" type="checkbox"/> litres (L)	<u>7</u>	<input checked="" type="checkbox"/> grams/ litre
_____	_____	_____	_____	<input type="checkbox"/> gallons (US) <input type="checkbox"/> gallons (UK) <input type="checkbox"/> cubic metres (m ³) <input type="checkbox"/> quarts (US) <input type="checkbox"/> ounces (US) <input type="checkbox"/> litres (L) <input type="checkbox"/> milliliters (mL)	_____	<input type="checkbox"/> lbs/gallon (US) <input type="checkbox"/> grams/ litre <input type="checkbox"/> % w/w and _____ Specific gravity (SG)
_____	_____	_____	_____	<input type="checkbox"/> gallons (US) <input type="checkbox"/> gallons (UK) <input type="checkbox"/> cubic metres (m ³) <input type="checkbox"/> quarts (US) <input type="checkbox"/> ounces (US) <input type="checkbox"/> litres (L) <input type="checkbox"/> milliliters (mL)	_____	<input type="checkbox"/> lbs/gallon (US) <input type="checkbox"/> grams/ litre <input type="checkbox"/> % w/w and _____ Specific gravity (SG)

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

Worksheet 3 – Other chemical usage

Skip this worksheet if no other chemicals are used at your facility.

This worksheet will help you collect information about the VOC content of other chemicals used at your facility. By completing the Tables in Worksheet 3, you will have all the information you need to fill in the "Other Chemical Usage" spreadsheet of the auto body calculator. You should collect data about your facility for the period from January 1 to December 31 of a calendar year.

Other chemicals that contain VOCs may be used at your facility besides those listed in [Worksheet 1 – Table 1](#) and [Worksheet 2 – Table 1](#), such as adhesives for bonding plastics and vinyl side mouldings. You will need to review each chemical's Material Safety Data Sheet (MSDS) to determine its VOC content. If the MSDS lists the VOC content range, then choose the midpoint. For example: if the VOC content is listed as 0.41 g/L - 0.63 g/L, then choose 0.52 g/L.

Enter the name of the material, quantity used, and VOC content in [Worksheet 3 - Table 1](#).

1. What is the quantity of each product used?

Enter the name of the product and quantity used in [Worksheet 3 - Table 1](#). If you reported Surface Cleaner data in [Worksheet 1 – Table 1](#), do not report it again here.

Data is input to the ChemTRAC calculator in the units of litres (L). You can also collect this information in the units:

- gallons (US)
- gallons (UK)
- cubic metres (m³)
- quarts (US)
- Ounces (US)
- milliliters (mL)

You can then use the conversion tool in the ChemTRAC calculator to enter the volume in litres (L).

2. What is the VOC content of each product used?

Enter the VOC content of each product used in [Worksheet 3 - Table 1](#).

Data is input to the ChemTRAC calculator in the units of grams/litre (g/L). You can also collect this information in the units:

- lbs/gallon (US)
- % w/w and specific gravity (SG)

You can then use the conversion tool in the ChemTRAC calculator to enter the volume in grams/litre (g/L).

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

Worksheet 3 – Table 1. Input the quantity and VOC content of other chemicals used at your facility

Material	Volume used	Units	VOC Content from MSDS	Units
*Example: Plastic and emblem adhesive	<u>1</u>	<input checked="" type="checkbox"/> litres (L)	<u>962</u>	<input checked="" type="checkbox"/> grams/ litre
_____	_____	<input type="checkbox"/> gallons (US) <input type="checkbox"/> gallons (UK) <input type="checkbox"/> cubic metres (m ³) <input type="checkbox"/> quarts (US) <input type="checkbox"/> ounces (US) <input type="checkbox"/> litres (L) <input type="checkbox"/> milliliters (mL)	_____	<input type="checkbox"/> lbs/gallon (US) <input type="checkbox"/> grams/ litre <input type="checkbox"/> % w/w and _____ Specific gravity (SG)
_____	_____	<input type="checkbox"/> gallons (US) <input type="checkbox"/> gallons (UK) <input type="checkbox"/> cubic metres (m ³) <input type="checkbox"/> quarts (US) <input type="checkbox"/> ounces (US) <input type="checkbox"/> litres (L) <input type="checkbox"/> milliliters (mL)	_____	<input type="checkbox"/> lbs/gallon (US) <input type="checkbox"/> grams/ litre <input type="checkbox"/> % w/w and _____ Specific gravity (SG)
_____	_____	<input type="checkbox"/> gallons (US) <input type="checkbox"/> gallons (UK) <input type="checkbox"/> cubic metres (m ³) <input type="checkbox"/> quarts (US) <input type="checkbox"/> ounces (US) <input type="checkbox"/> litres (L) <input type="checkbox"/> milliliters (mL)	_____	<input type="checkbox"/> lbs/gallon (US) <input type="checkbox"/> grams/ litre <input type="checkbox"/> % w/w and _____ Specific gravity (SG)
_____	_____	<input type="checkbox"/> gallons (US) <input type="checkbox"/> gallons (UK) <input type="checkbox"/> cubic metres (m ³) <input type="checkbox"/> quarts (US) <input type="checkbox"/> ounces (US) <input type="checkbox"/> litres (L) <input type="checkbox"/> milliliters (mL)	_____	<input type="checkbox"/> lbs/gallon (US) <input type="checkbox"/> grams/ litre <input type="checkbox"/> % w/w and _____ Specific gravity (SG)

Worksheet 4 – Sanding

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

Skip this worksheet if sanding is not performed at your facility.

This worksheet will help you collect information on dust collectors at your facility. The term “dust collectors” also refers to baghouses, fabric filters and cyclones associated with sanding. Dust collectors help control the emission of Particulate Matter 2.5 (PM_{2.5}) from sanding. If there are no dust collectors in place, then the mass of abrasive blasting material used is required to estimate the quantity of Particulate Matter 2.5 (PM_{2.5}) manufactured and released to air. By completing this worksheet, you will have all the information you need to fill in the "Sanding" spreadsheet of the auto body calculator. You should collect data for your facility for the period from January 1 to December 31 of a calendar year.

1. What is the airflow rate and operating schedule of your dust collectors? If your facility does not operate a dust collector, move onto Question 2.

Information is needed about the airflow rate of the dust collector. 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. Data is input to the ChemTRAC calculator in the units of cubic feet per minute (cfm).

You can also collect this information in the units:

- Cubic feet per minute
- Cubic metres per second
- Cubic metres per hour
- Litres per minute OR
- Litres per second.

You can then use the conversion tool in the ChemTRAC calculator to enter the airflow rate in cubic feet per minute (cfm).

You will also need to estimate the time that the dust collectors are operating to remove dust from the air. Information can be put into [Worksheet 4 – Table 1](#) below.

Information for a typical dust collector has been provided as an example. If your facility has multiple dust collectors, you should enter them separately (in different rows of the table).

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

Worksheet 4 – Table 1. Input the airflow rate and operating schedule of the dust collectors at your facility.

Airflow rate	Airflow rate units	Number of Operating Units	How often are dust collectors operating?		
			Hours per day	Days per week	Weeks per year
<u>Example:</u> <u>2,000</u>	<input checked="" type="checkbox"/> cfm <input type="checkbox"/> m ³ /s <input type="checkbox"/> L/m <input type="checkbox"/> L/s <input type="checkbox"/> m ³ /h	<u>1</u>	<u>5</u>	<u>5</u>	<u>50</u>
<u> </u>	<input type="checkbox"/> cfm <input type="checkbox"/> m ³ /s <input type="checkbox"/> L/m <input type="checkbox"/> L/s <input type="checkbox"/> m ³ /h	<u> </u>	<u> </u>	<u> </u>	<u> </u>
<u> </u>	<input type="checkbox"/> cfm <input type="checkbox"/> m ³ /s <input type="checkbox"/> L/m <input type="checkbox"/> L/s <input type="checkbox"/> m ³ /h	<u> </u>	<u> </u>	<u> </u>	<u> </u>

2. What is mass of abrasive blasting material used?

If your facility does not have a dust collector, then the mass of abrasive blasting material used for sanding is required to estimate the quantity of Particulate Matter 2.5 (PM_{2.5}) manufactured and released to air. Examples of abrasive material include aluminum oxide, silicon carbide, and glass beads. The mass of abrasive blasting material can be determined by reviewing your inventory and purchase records.

Data is input to the ChemTRAC calculator in the units of kilograms (kg).

You can also collect this information in the units:

- pounds (lbs)
- grams (g)

Worksheet 4 – Table 2. Input the mass of abrasive blasting material used.

Mass of abrasive blasting material	Units
<u>Example:</u> <u>20</u>	<input checked="" type="checkbox"/> lbs <input type="checkbox"/> kilograms (kg) <input type="checkbox"/> grams (g)
<u> </u>	<input type="checkbox"/> lbs <input type="checkbox"/> kilograms (kg) <input type="checkbox"/> grams (g)

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

Worksheet 5 – Transferred materials

Skip this worksheet if no chemicals are transferred offsite for treatment/disposal by a waste collection company.

This worksheet will help you collect information about the VOC content of chemicals transferred offsite for treatment/ disposal by a waste collection company. By completing the Tables in Worksheet 5, you will have all the information you need to fill in the "Transferred Materials" spreadsheet of the auto body calculator. You should collect data about your facility for the period from January 1 to December 31 of a calendar year.

1. What is the quantity of products transferred offsite as waste?

Enter the name of the product, HWIN classification, offsite transfer company, and quantity transferred offsite as waste in [Worksheet 5 -Table 1](#). If you reported Surface Cleaner data in [Worksheet 1 – Table 1](#) or cleaning materials in [Worksheet 2 – Table 2](#), do not report them again here.

Data is input to the ChemTRAC calculator in the units of litres (L). You can also collect this information in the units:

- gallons (US)
- gallons (UK)
- cubic metres (m³)
- quarts (US)
- Ounces (US)
- milliliters (mL)

You can then use the conversion tool in the ChemTRAC calculator to enter the volume in litres (L).

2. What is the VOC content of the transferred material?

Enter the VOC content of the transferred material in [Worksheet 5 -Table 1](#). You will need to review the transferred chemical's Material Safety Data Sheet (MSDS) to determine its VOC content. If the MSDS lists the VOC content range, then choose the midpoint. For example: if the VOC content is listed as 0.41 g/L - 0.63 g/L, then choose 0.52 g/L.

Data is input to the ChemTRAC calculator in the units of grams/litre (g/L). You can also collect this information in the units:

- lbs/gallon (US)
- % w/w and specific gravity (SG)

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

Worksheet 5 – Table 1. Input the name of the transferred material, HWIN classification, offsite transfer company, quantity of material used, and VOC content.

Transferred Material	HWIN Classification	Offsite Transfer Company	Volume Transferred	Units	VOC Content from MSDS	Units
Example: Spent colour coating	145 – Wastes from the use of paints, pigments and coatings	Environmental Solutions	<u>50</u>	<input checked="" type="checkbox"/> litres (L)	<u>420</u>	<input checked="" type="checkbox"/> grams/ litre
_____	_____	_____	_____	<input type="checkbox"/> gallons (US) <input type="checkbox"/> gallons (UK) <input type="checkbox"/> cubic metres (m ³) <input type="checkbox"/> quarts (US) <input type="checkbox"/> ounces (US) <input type="checkbox"/> litres (L) <input type="checkbox"/> milliliters (mL)	_____	<input type="checkbox"/> lbs/gallon (US) <input type="checkbox"/> grams/ litre <input type="checkbox"/> % w/w and _____ Specific gravity (SG)
_____	_____	_____	_____	<input type="checkbox"/> gallons (US) <input type="checkbox"/> gallons (UK) <input type="checkbox"/> cubic metres (m ³) <input type="checkbox"/> quarts (US) <input type="checkbox"/> ounces (US) <input type="checkbox"/> litres (L) <input type="checkbox"/> milliliters (mL)	_____	<input type="checkbox"/> lbs/gallon (US) <input type="checkbox"/> grams/ litre <input type="checkbox"/> % w/w and _____ Specific gravity (SG)

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 auto refinishing. The ChemTRAC calculator will then automatically calculate the quantities of ChemTRAC substances released from processes found in your automotive refinishing facility. This section of the guide provides a step-by-step walkthrough of the use of the calculator.

Getting started

The ChemTRAC calculator for auto refinishing can be used with software such as Microsoft Excel or Open Office. To find a copy of the calculator, go to <http://www.toronto.ca/health/chemtrac/industries/autobody.htm> and click on the **Autobody Refinishing** link found under the **Auto Body, Collision Repair and Auto Refinishing Sector (NAICS 81112)** heading.

The calculator consists of nine different screens:

1. Instructions
2. Paint Usage
3. Cleaning
4. Other Chemical Usage
5. Sanding
6. Transferred Materials
7. Total MPOs & Release
8. Calculations
9. References

You may enter information into the Paint Usage, Cleaning, Other Chemical Usage, Sanding, and Transferred Materials spreadsheets. Your facility's total use and release of priority substances is displayed in the Total MPOs & Release screen. The other screens are provided mainly for reference and are discussed in Appendix B. You do not need to enter information in these screens.¹

The Instructions screen illustrated below can help you use the calculator. You can navigate between screens by clicking the tabs at the bottom of each screen. The navigation buttons are illustrated below.

¹ If you have site-specific emission factors for any ChemTRAC substance, they can be entered manually in the Calculations 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 for how to use the calculator to estimate the amount of ChemTRAC substances and other substances that are used and released by your automotive refinishing facility. It also provides a brief overview of the contents of the calculator. The instructions screen is shown on the following pages. **You do not need to enter any information on this screen.**

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

Automotive Refinishing	
Version 3.1 Last Updated: November 28, 2012 CL, ZI, & DM	
This page contains necessary instructions that will help you use this calculator to estimate the amount of priority substances and other chemicals that are manufactured, processed, otherwise used (MPO) and released during Automotive Refinishing.	
How to use this calculator:	<ol style="list-style-type: none">1. Click on the "Paint Usage" Tab.2. Fill out the appropriate amounts in the yellow boxes.3. Click on the "Other Chemical Usage" Tab and list all the chemicals with VOC content that you use other than those listed in "Paint Usage" Tab.4. Click on the "Transferred Materials" Tab and list all the chemicals with VOC content that you transfer offsite.5. Click on the "Sanding" Tab and enter the air flow rate and operating schedule of any ventilation systems used during sanding.6. Go to the Output Summary on "Total MPOs & Release" Tab to review your annual substance MPOs and releases by this industrial process.
Input Summary:	<ol style="list-style-type: none">1. For each of the products (primer, coatings, surfacer, etc.) listed in the Paint Usage tab, indicate whether it is solvent-based or water-based/low VOC.2. Enter the quantity of product used during the reporting year in Litres.3. Indicate the type of control technology installed to control VOC emission.4. For other chemicals that are used, fill in the blanks in the Other Chemical Usage tab. Enter the quantity used during the reporting year in Litres and the VOC Content in grams/Litre (from the MSDS).5. Fill in the blanks in the Transferred Input Tab with the materials that you transferred offsite. Contact waste hauler to obtain the VOC Content of your transferred material.6. Fill in the blanks in the Sanding Tab. Enter the air flow rate and operating schedule of any ventilation systems used during sanding.



Navigation Tabs

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

Automotive Refinishing	
Version 3.1 Last Updated: November 28, 2012 CL, ZI, & DM	
This page contains necessary instructions that will help you use this calculator to estimate the amount of priority substances and other chemicals that are manufactured, processed, otherwise used (MPO) and released during Automotive Refinishing.	
Output summary:	This table gives you the estimated quantity of ChemTRAC priority substances this process manufactured, processed, otherwise used and released for the reporting year.
Other processes:	If your facility has other activities or sources that MPO or release priority substances (chemicals), then you need to calculate the amounts of chemicals for these activities as well. Please go to the ChemTRAC website for other calculators and more information.

Navigation Tabs

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

The Paint Usage screen

The Paint Usage screen is where you will enter all of the information applicable to your facility's automotive coating activities. Information is typed in **yellow boxes**. Any cells that do not apply to your facility can be left blank. **Dropdown menus** are also used to select the type of product used.

The Paint Usage screen can be filled out using the responses to the questions found within **Worksheet 1** of this guide.

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.² The values are displayed in the **Total MPOs & Release** screen. The next pages will walk you through the Paint Usage screen.

² 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

For each product that is used: select the product type from the drop-down menu and input the quantity used.

Choose the "Product Type" and provide the quantity of each product used below:

Product	Product Type	Quantity Used (L/yr)
Primer Surfacer	Select Select Water-based/Low VOC Solvent-based We don't use this	0
Primer Surfacer	Select	0
Primer Sealer	Select	0
Primer Sealer	Select	0
Epoxy Primer (Part A)	Select	0
Epoxy Primer (Part A)	Select	0
Epoxy Primer (Catalyst/Activator)	Select	0
Epoxy Primer (Catalyst/Activator)	Select	0
Pre-Treatment Wash Primer	n/a	0
Adhesion Promoter	n/a	0
Colour Coating	Select	0
Colour Coating	Select	0
Truck Bed Liner Coating	n/a	0
Temporary Protective Coating	Select	0
Temporary Protective Coating	Select	0
Underbody Coating	n/a	0
Single-Stage Coating	Select	0
Single-Stage Coating	Select	0
Clear Coating	Select	0
Clear Coating	Select	0
Clear Coat Hardener (Catalyst)	Select	0
Clear Coat Hardener (Catalyst)	Select	0
Clear Coat Reducer	Select	0

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

For each product: select the product type from the drop-down menu and input the quantity used.

Choose the "Product Type" and provide the quantity of each product used below:		
Product	Product Type	Quantity Used (L/yr)
Clear Coat Reducer	Select <input type="text"/>	0
Surface Cleaner	Select <input type="text"/>	0
Surface Cleaner	Select <input type="text"/>	0
Shop Rags Used	0	Select <input type="text"/>

Information regarding your spray-booth's VOC emissions control equipment is input below.

Do you operate any VOC emissions control equipment?	No <input type="text"/>
If yes, please provide the control efficiency (%):	0% <input type="text"/>

The quantity of products used must be reported in litres. If you measured the quantity used in another unit of volume, then use the conversion tools below.

Unit Conversion Table			
The quantity of coatings and other products used must be reported in litres. If you measure use in another unit of volume, use the conversion tools below:			
Volume:			
1.0	gallons (US)	=	3.8 litres
1.0	gallons (UK)	=	4.5 litres
1.0	cubic metres (m ³)	=	1000.0 litres
1.0	quarts (US)	=	0.9 litres
1.0	ounces (US)	=	0.0 litres
1.0	millilitres	=	0.0 litres

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

Imperial-Metric Unit Conversion:			
Imperial		Metric	
1.0	gal	=	3.785 L
1.0	lb/gal	=	119.828 g/L
1.0	g	=	0.001 kg
1.0	lb	=	0.454 kg
Properties Calculation:			
<i>INPUT</i>		<i>OUTPUT</i>	
Concentration in % w/w to g/L			
Percent Weight ²	Specific Gravity	VOC Content	
1.0%	1.0	=	0.10 g/L
Mass to volume using density			
Mass (kg)	Density (g/ml)	Volume	
1.0	1.0	=	1.00 L
² If the percentage is based on volume or if it is not specified on the MSDS, please contact supplier for concentration in g/L			

The Cleaning screen

The Cleaning screen is where you will enter all of the information applicable to your facility's cleaning activities. Information is typed in **yellow boxes**. Any cells that do not apply to your facility can be left blank.

The Cleaning screen can be filled out using the responses to the questions found within **Worksheet 2** of this guide.

Once you input your facility's information into the appropriate yellow boxes, the calculator automatically calculates the quantities of ChemTRAC substances that

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

are otherwise used and released to air from your facility.³ The values are displayed at the bottom of the screen in the **Total VOCs released from cleaning processes** field. These values are included in the data provided in the **Total MPOs & Release** screen. The next pages will walk you through the cleaning screen.

Information about VOC emissions control equipment in your spray-booth is input below. If cleaning is performed outside of the spray booth, and additional emissions control systems are not present, enter 0%.

Enter control device efficiency	0%	(From "Paint Usage" Tab) Only applicable if entire process is enclosed; otherwise input "0"
--	-----------	---

For each cleaning product: input its name in column B, the amount used (litres) in column C, and VOC content (grams/litre) in columns D. The controlled VOC release to air is calculated in column G.

VOCs released from Cleaning Chemicals Calculating VOC Releases (Enter data in columns B, C, and D. Columns E, F, and G will calculate automatically.)					
B	C	D	E	F	G
Materials/ Chemicals	Amount used in the year in litres	VOC content in grams per litre (from MSDS) ¹	VOC usage in kg (C*D)/1000	Uncontrolled VOC release in kg (C*D)/1000	Controlled VOC release in kg [(1-C12)*F]
	L	g/L	kg	kg	kg
<i>*Example: Paint gun wash (concentrate)</i>	7	962	6.73	6.73	6.73
			0.00	0.00	0.00
			0.00	0.00	0.00
Totals			0.00	0.00	0.00

The quantity of cleaning products used must be reported in litres. If you measured the quantity used in another unit of volume, then use the conversion tools below.

³ 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

Quantity Used - Unit Conversion:			
The quantity of coatings and other products used must be reported in litres. If you measured the quantity used in another unit of volume, then use the conversion tools below. Enter the quantity used in the "INPUT" column			
<i>INPUT</i>		<i>OUTPUT</i>	
1.0	gallons (US)	=	3.8 litres
1.0	gallons (UK)	=	4.5 litres
1.0	cubic metres (m ³)	=	1000.0 litres
1.0	quarts (US)	=	0.9 litres
1.0	ounces (US)	=	0.0 litres
1.0	millilitres	=	0.0 litres

The VOC content of cleaning products used must be reported in grams/litre. If you have a product's VOC content information in another unit, use the conversion tools below.

VOC Content Unit Conversion:			
Concentration in % w/w to g/L			
<i>INPUT</i>		<i>OUTPUT</i>	
Percent Weight*	Specific Gravity	VOC Content	
10.0	1.1	105.00 g/L	
Concentration in lb/gal to g/L			
<i>INPUT</i>		<i>OUTPUT</i>	
1	lb/gal	=	119.828 g/L
*If the percentage is based on volume or if it is not specified on the MSDS, please contact supplier for concentration in g/L			
Mass to volume using density			
<i>INPUT</i>		<i>OUTPUT</i>	
Mass (kg)	Density (g/ml)	Volume	
1.0	1.0	=	1.00 L

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

Information about spent cleaning materials that are transferred offsite are input in the following table. For each cleaning product that is transferred offsite: input the product name in column B, the HWIN classification in column C, the offsite transfer company in column D, the volume of waste transferred in column E (litres), and the VOC content (grams/litre) in column F. The quantity of VOCs transferred is calculated in column G.

VOCs from Cleaning Materials Calculating VOC Transferred During Cleaning (Enter data in columns A, B, C, D, E and Column F will calculate automatically) (If you do not know the VOC Content of your transferred material use the table on the right)					
B	C	D	E	F	G
Transferred Material	HWIN Classification	Offsite Transfer Company	Volume of Transferred Waste	VOC Content	VOC Transferred
			L	g/L	kg
<i>*Example: Automotive Surface Degreaser</i>	<i>212- Aliphatic Solvents</i>	<i>Environmental Solutions</i>	<i>150</i>	<i>7.00</i>	<i>1.05</i>
					<i>0.00</i>
					<i>0.00</i>
Totals			<i>0</i>		<i>0.00</i>

The total VOCs used and released from cleaning processes are output below.

Total VOCs used and released from cleaning processes				
ChemTRAC Priority Substances	Quantity Otherwise Used (kg/yr)	Quantity Transferred (kg/yr)	Uncontrolled Quantity Released to Air(kg/yr)	Controlled Quantity Released to Air (kg/yr)
Total VOCs	0.00	0.00	0.00	0.00

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

The Other Chemical Usage screen

The Other Chemical Usage screen is where you will enter all of the information about chemicals used by your facility that were not captured by the Paint Usage screen (Worksheet 1), or the Cleaning screen (Worksheet 2). Information is typed in **yellow boxes**. Any cells that do not apply to your facility can be left blank.

The Other Chemical Usage screen can be filled out using the responses to the questions found within **Worksheet 3** of this guide.

Once you input your facility's information into the appropriate yellow boxes, the calculator automatically calculates the quantities of ChemTRAC substances that are otherwise used and released to air from your facility.⁴ These values are included in the data provided in the **Total MPOs & Release** screen. The next page will walk you through the Other Chemical Usage screen.

⁴ 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

Information regarding VOC emissions control equipment in your spray-booth is input below. If chemicals are used outside of the spray booth, and no additional emissions control systems are present, enter 0%.

Enter control device efficiency	0%	(From "Paint Usage" Tab) Only applicable if entire process is enclosed; otherwise input "0"
--	-----------	---

For each product: input its name in column B, the amount used (litres) in column C, and VOC content (grams/litre) in columns D. The controlled VOC release to air is calculated in column F.

VOCs from Various Materials Calculating VOC Usage & Release (Enter data in columns A, B, and C. Column D and E will calculate automatically)				
B	C	D	E	F
Material	Amount used in the year	VOC Content (from MSDS) ¹	VOC Usage	Controlled VOC Release
	L	g/L	kg	kg
<i>* Example: Panel Adhesive</i>	150	16.00	2.40	2.40
			0.00	0.00
			0.00	0.00
Totals	0.00		0.00	0.00

¹If the MSDS lists a range, choose the midpoint (e.g., if VOC is listed as 0.41 g/L - 0.63 g/L, choose 0.52 g/L)

If unit conversions are required, please use the unit conversion tables shown on the Cleaning screen.

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

The Sanding screen

The Sanding screen is where you will enter all of the information in **yellow boxes** about your dust collectors and sanding practices. . Any cells that do not apply to your facility can be left blank.

The Sanding screen can be filled out using the responses to the questions found within **Worksheet 4** of this guide.

Once you input your facility's information into the appropriate yellow boxes, the calculator automatically calculates the quantities of ChemTRAC substances that are otherwise used and released to air from your facility.⁵ These values are included in the data provided in the **Total MPOs & Release** screen. The next page will walk you through the Sanding screen.

If your facility has dust collectors, complete Table 1. For dust collector with the same operating specs: input the number of units that are operating, the airflow rate in units of cubic feet per minute (cfm), and the operating schedule.

If your flow rate is measured in units other than cfm, then use the unit conversion table. You can enter the flow rate in cubic metres per second, litres per minute, litres per second or cubic metres per hour in the appropriate yellow cell. The flow rate will be converted to units of cfm in the blue cell on the right side of the table.

If sanding is performed, but your facility does not have dust collectors, complete Table 2. Input the mass of abrasive blasting material used in units of kilograms (kg). The unit conversion table can be used to convert measurements in grams or pounds to kilograms.

⁵ 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

Complete the following table if your facility operates dust collectors as part of its sanding operations.

Table 1. PM_{2.5} ESTIMATION FROM VENTILATION SYSTEMS					
Ventilation System	No. of Units	Airflow Rate (cfm)	Operating Schedule		
			hours/day	days/week	weeks/year
* Example: Ventilation System # 1	1	2,000	24	7	50

Complete the following table if your facility does not operate dust collectors as part of its sanding operations

Table 2. PM_{2.5} ESTIMATION WITHOUT INFORMATION ON VENTILATION SYSTEMS			
	Mass of Abrasive Used (kg)	Emission Factor PM _{2.5} (lb/1000 lb)	Quantity Released PM _{2.5} (kg/yr)
<i>Abrasive blasting of metal parts, controlled with a fabric filter</i>	0	0.4623	0

If your flow rate is measured in units other than cfm, then use the unit conversion table.

Unit Conversion Table			
INPUT		OUTPUT	
1.0	cubic metres per second	=	2118.88 cfm
1.0	litres per minute	=	0.04 cfm
1.0	litres per second	=	2.12 cfm
1.0	cubic metres per hour	=	0.59 cfm
Imperial		Metric	
1.0	g	=	0.001 kg
1.0	lb	=	0.454 kg

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

The Transferred Materials screen

The Transferred Materials screen is where you will enter all of the information applicable to spent products that are transferred offsite. Information is typed in **yellow boxes**. Any cells that do not apply to your facility can be left blank.

The Transferred Materials screen can be filled out using the responses to the questions found within **Worksheet 5** of this guide. If you have already reported transferred cleaning products in the "Cleaning" screen (Worksheet 2), then do not report them again here.

Once you input your facility's information into the appropriate yellow boxes, the calculator automatically calculates the quantities of ChemTRAC substances that are transferred offsite from your facility.⁶ These values are included in the data provided in the **Total MPOs & Release** screen. The next page will walk you through the Transferred Materials screen.

⁶ 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

Information about spent cleaning materials that are transferred offsite are input in the following table. For each cleaning product that is transferred offsite: input the product name in column A, the HWIN classification in column B, the offsite transfer company in column C, the volume of waste transferred in column D (litres), and the VOC content (grams/litre) in column E. The quantity of VOCs transferred is calculated in column F.

VOCs from Various Materials Calculating VOC Transferred (Enter data in columns A, B, C, D, E and Column F will calculate automatically) (If you do not know the VOC Content of your transferred material use the table on the right)					
A	B	C	D	E	F
Transferred Material	HWIN Classification	Offsite Transfer Company	Volume of Transferred Waste	VOC Content	VOC Transferred
			L	g/L	kg
<i>* Example: Spent colour coating</i>	<i>145 – Wastes from the use of paints, pigments and coatings</i>	<i>Environmental Solutions</i>	<i>50</i>	<i>420.00</i>	<i>21.00</i>
					<i>0.00</i>
Totals			0		0.00

If unit conversions are required, please use the unit conversion tables shown on the Cleaning screen.

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

The Total MPOs & Release screen

The Total MPOs & Release screen displays the quantities of ChemTRAC Priority substances that your facility manufactures, processes, otherwise uses, and releases to air. These values are calculated based on the information you entered about your facility in the Paint Usage, Cleaning, Other Chemical Usage, Transferred Materials, and Sanding screens.

ChemTRAC Priority Substances	Quantity (kg/yr)			
	Manufactured ¹	Processed ¹	Otherwise Used ¹	Released to Air ¹
Particulate Matter 2.5 (PM _{2.5})	0	0	0	0
Total Volatile Organic Compounds (VOCs)	0	0	0	0

¹ Definitions available on References tab

Entering information from Worksheet 1 – Vehicle coatings

The images below display the area of the Paint usage screen where you enter information about the types and quantities of vehicle coatings used. For each product used, the corresponding data from Worksheet 1 – Table 1 are input. Information about the number of shop rags used from Worksheet 1 – Table 2 and VOC emission control equipment from Worksheet 1 – Table 3 is also input.

Using the Primer Surfacer example from Worksheet 1 – Table 1:

Question 1: “Water based/low VOC” is selected from the dropdown menu as the type of primer surface used

Question 2: “100” Litres/year is typed into the yellow box as the quantity of primer surfacer used.

Product	Product Type	Quantity Used (L/yr)
Primer Surfacer	Water-based/Low VOC	100

Using the example from Worksheet 1 – Table 2:

Question 3: “10,000” is typed into the yellow box as the number of shop towels used. “Units” is selected from the drop down menu to indicate the number of towels used.

Shop Rags Used	10,000	units
----------------	--------	-------

Using the example from Worksheet 1 – Table 3:

Question 4: “Yes” is selected from the drop down menu and “90” % is typed into the yellow box as the VOC control efficiency

Do you operate any VOC emissions control equipment?	Yes
If yes, please provide the control efficiency (%):	90%

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

An example of a completed Paint Usage screen is provided below:

Product	Product Type	Quantity Used (L/yr)
Primer Surfacer	Water-based/Low VOC	100
Primer Surfacer	Select	0
Primer Sealer	Water-based/Low VOC	1,000
Primer Sealer	Select	0
Epoxy Primer (Part A)	Water-based/Low VOC	250
Epoxy Primer (Part A)	Select	0
Epoxy Primer (Catalyst/Activator)	Water-based/Low VOC	250
Epoxy Primer (Catalyst/Activator)	Select	0
Pre-Treatment Wash Primer	n/a	0
Adhesion Promoter	n/a	0
Colour Coating	Water-based/Low VOC	1,000
Colour Coating	Select	0
Truck Bed Liner Coating	n/a	0
Temporary Protective Coating	Water-based/Low VOC	0
Temporary Protective Coating	Select	0
Underbody Coating	n/a	0
Single-Stage Coating	Water-based/Low VOC	1,000
Single-Stage Coating	Select	0
Clear Coating	Water-based/Low VOC	1,000
Clear Coating	Select	0
Clear Coat Hardener (Catalyst)	Water-based/Low VOC	250
Clear Coat Hardener (Catalyst)	Select	0
Clear Coat Reducer	Water-based/Low VOC	250
Clear Coat Reducer	Select	0
Surface Cleaner	Water-based/Low VOC	100
Surface Cleaner	Select	0
Shop Rags Used	10,000	units
Do you operate any VOC emissions control equipment?	Yes	
If yes, please provide the control efficiency (%):	90%	

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

Entering information from Worksheet 2 – Products used for cleaning

The images below display the area of the Cleaning screen where you enter information about the cleaning products used. For each product used, the answers to question 1 and 2 of Worksheet 2 are input. This information corresponds to the data provided in Worksheet 2 – Table 1. For each product transferred, the answers to question 3 and 4 of Worksheet 2 are input. This information corresponds to the data provided in Worksheet 2 – Table 2.

Information about VOC emissions control equipment in your spray-booth is input below. If cleaning is performed outside of the spray booth, and additional emissions control systems are not present, enter 0%.

Enter control device efficiency	0%	(From "Paint Usage" Tab) Only applicable if entire process is enclosed; otherwise input "0"
--	-----------	---

Using the example from Worksheet 2 – Table 1:

Question 1: "Paint gun cleaner (concentrate)" is input to the first yellow box in column B and "7" Litres is input to column C.

Question 2: "962" g/L is typed into column D as the VOC content of the cleaning product used.

VOCs released from Cleaning Chemicals Calculating VOC Releases (Enter data in columns B, C, and D. Columns E, F, and G will calculate automatically.)					
B	C	D	E	F	G
Materials/ Chemicals	Amount used in the year in litres	VOC content in grams per litre (from MSDS) ¹	VOC usage in kg (C*D)/1000	Uncontrolled VOC release in kg (C*D)/1000	Controlled VOC release in kg [(1-C12)*F]
	L	g/L	kg	kg	kg
Paint gun cleaner (concentrate)	7	962	6.73	6.73	6.73
Totals			6.73	6.73	6.73

Using the example from Worksheet 2 – Table 2:

Question 3: "Automotive Surface Degreaser" is input into column B as the name of the cleaning product transferred. Additional information such as the HWIN classification and offsite transfer company can be input to columns C and D, but this information is not mandatory. "150" Litres is input into column E as the volume of waste transferred.

Question 4: "7" g/L is typed into the yellow box as the VOC content of the transferred material.

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

VOCs from Cleaning Materials Calculating VOC Transferred During Cleaning (Enter data in columns A, B, C, D, E and Column F will calculate automatically) (If you do not know the VOC Content of your transferred material use the table on the right)					
B	C	D	E	F	G
Transferred Material	HWIN Classification	Offsite Transfer Company	Volume of Transferred Waste	VOC Content	VOC Transferred
			L	g/L	kg
Automotive Surface Degreaser	212 - Aliphatic Solvents	Transfer Company Name	150.0	7.0	1.05
Totals			150		1.05

The total VOCs used and released from cleaning processes are output below.

Total VOCs used and released from cleaning processes				
ChemTRAC Priority Substances	Quantity Otherwise Used (kg/yr)	Quantity Transferred (kg/yr)	Uncontrolled Quantity Released to Air(kg/yr)	Controlled Quantity Released to Air (kg/yr)
Total VOCs	6.73	1.05	5.68	5.68

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

Entering information from Worksheet 3 – Other chemical usage

The images below display the area of the Other Chemical Usage screen where you enter information about all other products used. For each product used, the answers to question 1 and 2 of Worksheet 3 are input. This information corresponds to the data provided in Worksheet 3 – Table 1.

Information about VOC emissions control equipment in your spray-booth is input below. If other chemicals are used outside of the spray booth, and additional emissions control systems are not present, enter 0%.

Enter control device efficiency	0%	(From "Paint Usage" Tab) Only applicable if entire process is enclosed; otherwise input "0"
--	-----------	---

Using the example from Worksheet 3 – Table 1:

Question 1: "Plastic and emblem adhesive" is input to the first yellow box in column B and "1" Litre is input to column C.

Question 2: "962" g/L is typed into column D as the VOC content of the product used.

VOCs from Various Materials Calculating VOC Usage & Release (Enter data in columns A, B, and C. Column D and E will calculate automatically)				
B	C	D	E	F
Material	Amount used in the year	VOC Content (from MSDS) ¹	VOC Usage	Controlled VOC Release
	L	g/L	kg	kg
Plastic and emblem adhesive	1.00	962.00	0.96	0.96
Totals	1.00		0.96	0.96

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

Entering information from Worksheet 4 – Sanding

The images below display the area of the Sanding screen where you enter information about your facility's dust collectors and sanding practices. If a dust collector is used, the answers to question 1 of Worksheet 4 are input into Table 1. This information corresponds to the data provided in Worksheet 4 – Table 1. If a dust collector is not used the answers to question 2 of Worksheet 4 are input into Table 2. This information corresponds to the data provided in Worksheet 4 – Table 2.

Using the example from Worksheet 4 – Table 1:

Question 1: "Ventilation System #1" is input as the name of the ventilation system. "1" is input as the number of units. "2,000" cfm is input as the airflow rate. An operating schedule of 5 hours per day, 5 days per week, and 50 weeks per year is entered in the appropriate boxes.

Table 1. PM_{2.5} ESTIMATION FROM VENTILATION SYSTEMS					
Ventilation System	No. of Units	Airflow Rate (cfm)	Operating Schedule		
			hours/day	days/week	weeks/year
Ventilation System # 1	1	2,000	5	5	50

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

Entering information from Worksheet 5 – Transferred materials

The images below display the area of the Transferred Materials screen where you enter information about chemicals transferred offsite for treatment/ disposal by a waste collection company. For each product transferred, the answers to question 1 and 2 of Worksheet 5 are input. This information corresponds to the data provided in Worksheet 5 – Table 1.

Using the example from Worksheet 5 – Table 1:

Question 1: "Spent colour coating " is input into column B as the name of the transferred product. Additional information such as the HWIN classification and offsite transfer company can be input to columns C and D, but this information is not mandatory. "50" Litres is input into column E as the volume of waste transferred.

Question 2: "420" g/L is typed into the yellow box as the VOC content of the transferred material.

VOCs from Various Materials					
Calculating VOC Transferred					
(Enter data in columns A, B, C, D, E and Column F will calculate automatically)					
(If you do not know the VOC Content of your transferred material use the table on the right)					
A	B	C	D	E	F
Transferred Material	HWIN Classification	Offsite Transfer Company	Volume of Transferred Waste	VOC Content	VOC Transferred
			L	g/L	kg
Spent colour coating	145 – Wastes from the use of paints, pigments and coatings	Environmental Solutions	50	420.0	21.0
Totals			50		21.0

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

Reading the Output Summary table

The Output Summary table on the "Total MPOs & Release" screen displays the quantities of ChemTRAC substances that are manufactured, processed, otherwise used, and released to air by your facility. These values are the results of all of the calculations based on the information entered in the previous 5 screens. The Output table shown below is the result of the sample information entered in the *Using the Calculator* section above.

ChemTRAC Priority Substances	Quantity (kg/yr)			
	Manufactured	Processed	Otherwise Used	Released to Air
Particulate Matter 2.5 (PM _{2.5})	150	0	0	150
Total Volatile Organic Compounds (VOCs)	0	1,433	15	135

You should compare the values that are manufactured, processed or otherwise used, and released to air to the ChemTRAC reporting thresholds to determine if you are required to report ChemTRAC substances. See Interpreting Results on page 52 for more details.

Interpreting results

Compare results to thresholds. Once the amounts of ChemTRAC substances manufactured, processed, otherwise used, and released to air have been calculated, you must compare these amounts to the ChemTRAC reporting thresholds listed in the Environmental Reporting and Disclosure Bylaw.⁷ These thresholds are also listed in Appendix C of this guide.

If results exceed thresholds you must report. If a ChemTRAC priority substance is manufactured, processed, or otherwise used, and released to air 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.

Combining multiple calculation methods. Some facilities may need to add results of the ChemTRAC calculator for Wood Office Furniture 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. Table 2 on the next page compares the Output table from the section above to ChemTRAC thresholds. This example uses the values from Worksheets 1 - 5.

⁷ The full by-law can be found at <http://www.toronto.ca/health/chemtrac/report.htm>.

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

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

Output Summary table from the ChemTRAC calculator					Comparison to reporting thresholds	
ChemTRAC Priority Substances	Manufactured (kg/yr)	Processed (kg/yr)	Otherwise used (kg/yr)	Released to air (kg/yr)	ChemTRAC threshold (kg/yr)	Is reporting required?
Benzene	0	0	0	0	100	No
Cadmium and its compounds	0	0	0	0	1	No
Chromium, non-hexavalent and its compounds	0	0	0	0	100	No
Formaldehyde	0	0	0	0	100	No
Lead and its compounds	0	0	0	0	10	No
Manganese and its compounds	0	0	0	0	10	No
Mercury and its compounds	0	0	0	0	1	No
Nickel and its compounds	0	0	0	0	100	No
Nitrogen Oxides	0	0	0	0	200 (released to air)	No
Particulate Matter (PM_{2.5})	150	0	0	150	30 (released to air)	Yes
Tetrachloroethylene (Perchloroethylene)	0	0	0	0	100	No
PAHs	0	0	0	0	10	No
Volatile Organic Compounds (VOCs)	0	1,433	15	135	100 (released to air)	Yes

In example shown in Table 2, PM_{2.5} and VOCs are manufactured, processed, otherwise used, or released to air in quantities above the reporting thresholds.

Therefore, in this example, the manufacturing and release to air of PM_{2.5} would need to be reported to ChemTRAC. The processing, otherwise use, and release to air of VOCs would also need to be reported to ChemTRAC.

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 ChemTRAC website interface. At the top is the ChemTRAC logo. Below it is a navigation menu with tabs for Overview, For Business, For Communities, Disclosure Reports, Links, Contact Us, and E-news. Underneath the navigation menu are links for '4 steps to reporting', 'Reporting exemptions', 'Reporting FAQ', and 'Business FAQ'. The main content area is titled '4 Steps to Reporting' and includes a link to the Environmental Reporting and Disclosure Bylaw (Municipal Code Chapter 423). It lists four steps: Step 1: Determine if the Bylaw applies to your facility; Step 2: Determine if you need to report in a given year; Step 3: Prepare your data for reporting; Step 4: Submit your data online by June 30th each year. To the right of the steps is a 'Ready to report?' section with a button for 'ChemTRAC Online Reporting' and a 'See reported data' section with a button for 'ChemTRAC Data Map'. A callout box with an arrow points to the 'ChemTRAC Online Reporting' button, containing the text: 'Click here to access the online reporting system'. Below the buttons is a notice: 'The deadline for reporting 2011 data has passed. If you missed the deadline and still need to report, please [contact us](#) immediately.'

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

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.

Click "I agree" to enter the online reporting system

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

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
Contact us
Terms of use
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 wood office furniture manufacturers, this will be “33 – Manufacturing”. Then, you can select the appropriate 4-digit code (3372), and finally, the 6 digit code (337213).

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

NAICS 2-Digit:	81 - Other Services (exc. Public Administration)	▼
NAICS 4-Digit:	8111 - Automotive R&M	▼
NAICS 6-Digit:	811121 - Automotive Body, Paint & Interior R&M	▼

Step 2. Reporting period

In Step 2, you will choose the calendar year from the dropdown menu and select **"I meet the reporting requirements and am providing data"**.

If your calculations showed you to be below the reporting threshold, you can select, **"I do not meet reporting thresholds"**.

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 Particulate Matter 2.5 and VOCs were the only substances that exceeded thresholds.

<input checked="" type="checkbox"/>	Particulate Matter 2.5 (PM 2.5)
<input checked="" 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 auto body refinishing facilities, PM_{2.5} are “manufactured” and “released to air”. VOCs are “processed”, “otherwise used”, and “released to air”.

Next, you will need to **enter the total quantity of the substances that your facility used 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.

The example below illustrates how to complete Step 4 for Particulate Matter 2.5 using information from Worksheet 4 – Table 1 of this guide.

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

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: i	500 ChemTRAC calculator
Processed: i	- Select Estimation Method From List -
Otherwise Used: i	- Select Estimation Method From List -
Total Use:	500
Release to Air: i	500 ChemTRAC calculator
Release to Land: i	- Select Estimation Method From List -
Release to Surface Water: i	- Select Estimation Method From List -
Total Release:	500

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 60 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 specific to wood office furniture manufacturers 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: Schedule batch processing of lighter shades of paint before darker shades of paint so that equipment does not need to be cleaned between batches.
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: Use a vacuum system and bag-house to remove sanding and filler dust.
3. **Modify products or inputs.** Traditional products and processes can be replaced with alternatives that use and release less harmful chemicals.
For example: Choose coatings with lower VOC content.

Control technologies for reducing emissions

Control technologies can reduce the quantity of ChemTRAC substances that are released from automotive refinishing facilities. Control technologies can limit VOC emissions from surface coating applications and PM_{2.5} emissions from sanding.

Technology for reducing VOCs from coatings

Recall that volatile organic compounds (VOCs) are released from materials used in an auto body facility such as automotive coatings and solvents used for parts cleaning (degreasing, and metal surface cleaning).

Alternative Coatings

- **Low VOC paints and coatings.** Auto body facilities can dramatically reduce their VOC emissions by using products with a lower VOC content than is required by law.
- **Water-based paints and coatings** generally have lower VOC contents than solvent-based coatings.

HVLP spray guns. Manufacturers can also reduce VOC emissions by increasing the efficiency of coating and painting. High volume low pressure spray guns increase transfer efficiency from 20-40%⁸. They are effective for both solvent- and water-based products. High efficiency guns like HVLP spray guns have higher transfer efficiencies (60-70%) than conventional spray guns (20-30%).

VOC control equipment. VOC emissions control equipment can dramatically reduce VOC emissions.

Catalytic oxidizers that can achieve 95% VOC destruction at low temperatures. They are compact, lightweight systems that have low operating costs and low capital costs.

Regenerative thermal oxidizers are higher capacity systems that are commonly used in paint spray booths and by coatings manufacturers. They can achieve 99% VOC destruction efficiency. They operate at high temperatures but can recover and reuse up to 95% of the heat they generate.

Technology for reducing NO_x emissions from spray booth heating

There are two common control technologies that can help decrease the amount of combustion by-products released from natural gas used to heat spray booths. They are known as low NO_x burners and recirculated flue gas. Both of these control technologies specifically reduce the amount of NO_x that is released as a

⁸ <http://www.autobodyhelp.ca/gun.html>

Part 2: Reducing your facility's environmental impact

combustion by-product.⁹ These control technologies generally are not considered to reduce the amounts of other combustion by-products.

Low NO_x burners. When natural gas is used to create heat, the gas passes over a flame, gets combusted, generates heat, and produces combustion by-products, including NO_x. A low NO_x burner combusts the gas in several stages. This allows the flame to burn at a cooler temperature, which reduces the amount of NO_x that is created as a by-product. A low NO_x burner can reduce NO_x creation by about 50%.

Recirculated flue gas. When natural gas gets combusted over the flame to produce heat, the resulting air containing the combustion by-products is called flue gas. If the flue gas is mixed back into the natural gas being fed to the flame (i.e. recirculated), this changes the combustion process and results in less NO_x being produced. Recirculated flue gas is often used in conjunction with low NO_x burners. Recirculated flue gas with low NO_x burners can reduce NO_x emissions by about 70%.

Technology for reducing PM_{2.5} from sanding

Recall that particulate matter (PM_{2.5}) in the form of sanding dust is released into the air.

Dust collection systems. Effective dust collection systems can reduce the amount of PM_{2.5} that is released from sanding. Fabric filters, bag houses and cyclones are examples of dust collection systems. These systems take in air with a high abundance of PM_{2.5}, collect much of the PM_{2.5} within filters or bags, and release the air with a reduced amount of PM_{2.5}. When purchasing a dust collection system, consider what capacity you need. The unit should have

An effective dust collection system can have other economic benefits:

- Sanding equipment may also last longer as dust will not become embedded in them.

⁹ NO_x refers to total amounts of nitric oxide (NO) and nitrogen dioxide (NO₂).

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Table 3 summarizes the control technologies discussed above.

Table 3. Control technologies for VOCs, PM_{2.5} and combustion by-products

Process or product	Control technology	ChemTRAC substance being controlled
Sanding	Dust Collection systems: fabric filters, bag houses, cyclones, etc.	Particulate matter (PM _{2.5})
Vehicle coatings	Water-based coatings, Low-VOC coatings	Volatile Organic Compounds (VOCs)
	High volume low pressure spray guns	Volatile Organic Compounds (VOCs)
	VOC control equipment: thermal oxidizers, catalytic oxidizers, etc.	Volatile Organic Compounds (VOCs)
Combustion of natural gas	Low NO _x burners	Nitrogen oxides (NO _x)
	Recirculated flue gas with low NO _x burners	Nitrogen oxides (NO _x)

More ways to reduce costs and improve performance

Minimizing the use and release of harmful substances is one aspect of improving environmental performance. Automotive refinishing facilities can also take other steps to improve their economic and environmental sustainability.

1. **Reduce energy use.** By reducing energy use, automotive refinishing 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 equipment with more efficient equipment
- Installing a programmable thermostat to control heating and cooling
- Assigning one person to review and track energy usage and to investigate opportunities for energy savings.

2. **Reduce water use.** Working to reduce water use can save money and provide environmental benefits.

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

- Minimizing water use in cleaning procedures
- Posting signs near sinks and hoses to encourage employees to use less water
- Purchasing high pressure, low volume cleaning equipment
- Purchasing water-saving plumbing fixtures
- Regularly checking water-supply equipment for leaks.

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 the 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** and **training workshops** to assist businesses in creating 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/business_resources.htm

The following table lists many options to help you reduce or stop using priority substances. Some measures will cost more than others, and some will be easier to implement than others. Operators can implement certain measures by making minor shifts in their day-to-day approaches; others will require management to invest in new technologies.

The tables provide a quick and simple way to assess what measures your business has already put into place and those measures that your business could apply (with an opportunity to rate them high, medium or low).



Low-cost, good operating procedures – These measures involve operational and managerial changes that can reduce chemical use. They include simple changes to normal practices, process improvements, as well as training and good housekeeping opportunities. This measure does not need new technology purchases.



Choosing an alternative chemical – These measures involve replacing traditional products (such as paints and cleaning products) with products that have less harmful properties. The ease and cost of these measures depends on the product and the process used.



New technology – These measures involve the installation of a new system, machine or process. The cost varies depending on the technology.

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Maintenance, Management and Good Housekeeping Checklist

Process	Pollution Prevention Opportunities	Type of activity	In Place?			What level of priority do we put on implementing this measure? (High, Medium or Low)		
			Yes	No	N/A	H	M	L
Purchasing and Inventory	Review suppliers' products regularly and select the most environmentally-responsible products when available.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	H	M	L
	Keep an accurate inventory of products used, especially in relation to the number of vehicles painted.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	H	M	L
	Order solvents, paints and other product containers sized for minimum storage time to reduce waste from expired products.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	H	M	L
	Work with suppliers to take back unused product.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	H	M	L
Equipment and Shop Cleaning	Substitute less harmful cleaning products such as water-based biodegradable cleaners (no-VOC or low-VOC) or use recyclable solvents.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	H	M	L
	Improve manual cleaning practices: <ul style="list-style-type: none"> Do not soak rags or cloths in solvent. Use a spray bottle. Reuse shop towels or wipes for repetitive tasks. 		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	H	M	L
	Launder towels that have been used for cleaning to recover solvent. Either launder towels on-site, or collect and send to a laundry facility off-site.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	H	M	L

Part 2: Reducing your facility's environmental impact

Process	Pollution Prevention Opportunities	Type of activity	In Place?			What level of priority do we put on implementing this measure? (High, Medium or Low)		
			Yes	No	N/A	H	M	L
	Do not allow rags to dry before being placed in collection cans and keep lids on cans to stop the VOCs from going into the air.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	H	M	L
	Regularly maintain and clean equipment to reduce cleaning effort, to extend equipment life, and to reduce solvent use.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	H	M	L
	Use an enclosed paint gun washer for the final stage of gun cleaning to reduce solvent use and VOC emissions.	<input type="checkbox" value="T"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	H	M	L
	Use a two-stage cleaning process. Flush paint guns with used solvent before cleaning with new solvent.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	H	M	L
	Use solvents until they lose their effectiveness, as opposed to when they look dirty.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	H	M	L
	Use an interceptor or alternative separation treatment system before wastewater is discharged.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	H	M	L
	Discharge wastewater in accordance with local sewer use by-laws. (*R1*)		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	H	M	L

Part 2: Reducing your facility's environmental impact

Process	Pollution Prevention Opportunities	Type of activity	In Place?			What level of priority do we put on implementing this measure? (High, Medium or Low)		
			Yes	No	N/A	H	M	L
Solvent Recovery	Install a drying rack and/or drip pan to collect solvents from washed parts.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	H	M	L
	Recover solvents on-site from towels using one of the following methods: <ul style="list-style-type: none"> • A gravity drain. • Mechanical wringing. • Centrifuge - when towels are spun, solvent is whisked from the towels. • A solvent still – solvent is separated from other contaminants. 	<input type="checkbox"/> T	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	H	M	L
	Use a commercial solvent recycler to reclaim waste solvent cleaners, or recycle them off-site. By recycling and reusing your solvents, you are purchasing less solvent and hauling less waste off-site.	<input type="checkbox"/> T	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	H	M	L
Storage	Store chemicals according to manufacturer's recommendations.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	H	M	L
	Keep solvent, paint, etc. containers tightly covered at all times. Storing liquids properly reduces air emissions and waste products.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	H	M	L
	Eliminate all open buckets. Provide solvent in easily used, closed containers.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	H	M	L

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Process	Pollution Prevention Opportunities	Type of activity	In Place?			What level of priority do we put on implementing this measure? (High, Medium or Low)		
			Yes	No	N/A	H	M	L
Training	Date containers when opened to ensure you use them before products expire. Recycle containers when empty.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	H	M	L
	Label all containers to identify the contents to avoid improper handling or disposal.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	H	M	L
	Collect and segregate all wastes generated. Do not mix incompatible wastes.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	H	M	L
	Train workers to follow the standard work procedures (such as cleaning and set up), good housekeeping, and correct material handling methods to make sure all operators follow the same steps to reduce chemical use and waste.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	H	M	L
	Train spray gun operators in proper spray techniques to minimize coating waste generation. (*R2*)		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	H	M	L
Spills	Develop a spill response plan and post it so that it is available for all employees.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	H	M	L
	Make spill kits available at the chemical storage rooms or racks for easy access.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	H	M	L
	Train workers in emergency spill response.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	H	M	L
	Use spill decks and containment units under solvent and hazardous waste pails/drums.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	H	M	L

Part 2: Reducing your facility’s environmental impact

Process	Pollution Prevention Opportunities	Type of activity	In Place?			What level of priority do we put on implementing this measure? (High, Medium or Low)		
			Yes	No	N/A	H	M	L
Other	Ask employees for P2 suggestions.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	H	M	L

R1 - City of Toronto Pollution Prevention and Sewer Bylaw for Auto Refinishing (Bylaw #457-2000)

R2 - Ontario Ministry of Environment Certificate of Approval requirement for an automotive paint spray booth and associated equipment (Ontario Regulation 419/05: Air Pollution – Local Air Quality)

Part 2: Reducing your facility's environmental impact

Additional resources on reducing the environmental impact of the automotive refinishing process include:

- Toronto Public Health, ChemTRAC. Resource for Greening Auto Body, Collision Repair and Auto Refinishing. December 2010.
<http://www.toronto.ca/health/chemtrac/industries/pdf/autobody.pdf>
- Autobody help.ca. Virtual Collision / Paint Shop Regulations and Pollution Prevention
<http://www.autobodyhelp.ca/regs.html>
- Boston Public Health Commission. Auto Shop Pollution Prevention Video Protecting Your Environment, Your Employees, and Your Business
<http://www.bphc.org/programs/cib/environmentalhealth/environmentalhazards/safeshops/videoandmultimedia/Pages/Home.aspx>
- US EPA. Auto Repair and Fleet Maintenance Pollution Prevention. June 2011. **<http://www.epa.gov/region9/waste/p2/autofleet/index.html>**

Appendices

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

Appendix A. Printer-friendly versions of the 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 Commercial Wood office furniture manufacturers with emissions data from other sources.

Appendix C. Reporting Checklist

- *A checklist to help you ensure the data you submit in your ChemTRAC reports are accurate.*

Additional Material

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 – Vehicle coatings

Worksheet 1 – Table 1. Select the coating product and type. Input the quantity used last year.

Coating product	Product type	Containers per year	Size of container	Units	Quantity used
<input checked="" type="checkbox"/> Example: Primer Surfacer	<input checked="" type="checkbox"/> Waster-based/ Low-VOC	Nitrogen oxides (NO _x)	<u>1</u>	<input checked="" type="checkbox"/> litres (L)	<u>100</u>
<input type="checkbox"/> Primer Surfacer	<input type="checkbox"/> Waster-based/ Low-VOC <input type="checkbox"/> Solvent-based	_____	_____	<input type="checkbox"/> gallons (US) <input type="checkbox"/> gallons (UK) <input type="checkbox"/> cubic metres (m ³) <input type="checkbox"/> quarts (US) <input type="checkbox"/> ounces (US) <input type="checkbox"/> litres (L) <input type="checkbox"/> milliliters (mL)	_____
<input type="checkbox"/> Primer Surfacer	<input type="checkbox"/> Waster-based/ Low-VOC <input type="checkbox"/> Solvent-based	_____	_____	<input type="checkbox"/> gallons (US) <input type="checkbox"/> gallons (UK) <input type="checkbox"/> cubic metres (m ³) <input type="checkbox"/> quarts (US) <input type="checkbox"/> ounces (US) <input type="checkbox"/> litres (L) <input type="checkbox"/> milliliters (mL)	_____
<input type="checkbox"/> Primer Sealer	<input type="checkbox"/> Waster-based/ Low-VOC <input type="checkbox"/> Solvent-based	_____	_____	<input type="checkbox"/> gallons (US) <input type="checkbox"/> gallons (UK) <input type="checkbox"/> cubic metres (m ³) <input type="checkbox"/> quarts (US) <input type="checkbox"/> ounces (US) <input type="checkbox"/> litres (L) <input type="checkbox"/> milliliters (mL)	_____
<input type="checkbox"/> Primer Sealer	<input type="checkbox"/> Waster-based/ Low-VOC <input type="checkbox"/> Solvent-based	_____	_____	<input type="checkbox"/> gallons (US) <input type="checkbox"/> gallons (UK) <input type="checkbox"/> cubic metres (m ³) <input type="checkbox"/> quarts (US) <input type="checkbox"/> ounces (US) <input type="checkbox"/> litres (L) <input type="checkbox"/> milliliters (mL)	_____

Additional Material

Worksheet 1 – Table 1 (Continued). Select the coating product and type. Input the quantity used last year.

Coating product	Product type	Containers per year	Size of container	Units	Quantity used
<input type="checkbox"/> Epoxy Primer (Part A)	<input type="checkbox"/> Water-based/ Low-VOC <input type="checkbox"/> Solvent-based	_____	_____	<input type="checkbox"/> gallons (US) <input type="checkbox"/> gallons (UK) <input type="checkbox"/> cubic metres (m ³) <input type="checkbox"/> quarts (US) <input type="checkbox"/> ounces (US) <input type="checkbox"/> litres (L) <input type="checkbox"/> milliliters (mL)	_____
<input type="checkbox"/> Epoxy Primer (Part A)	<input type="checkbox"/> Water-based/ Low-VOC <input type="checkbox"/> Solvent-based	_____	_____	<input type="checkbox"/> gallons (US) <input type="checkbox"/> gallons (UK) <input type="checkbox"/> cubic metres (m ³) <input type="checkbox"/> quarts (US) <input type="checkbox"/> ounces (US) <input type="checkbox"/> litres (L) <input type="checkbox"/> milliliters (mL)	_____
<input type="checkbox"/> Epoxy Primer (Catalyst/ Activator)	<input type="checkbox"/> Water-based/ Low-VOC <input type="checkbox"/> Solvent-based	_____	_____	<input type="checkbox"/> gallons (US) <input type="checkbox"/> gallons (UK) <input type="checkbox"/> cubic metres (m ³) <input type="checkbox"/> quarts (US) <input type="checkbox"/> ounces (US) <input type="checkbox"/> litres (L) <input type="checkbox"/> milliliters (mL)	_____
<input type="checkbox"/> Epoxy Primer (Catalyst/ Activator)	<input type="checkbox"/> Water-based/ Low-VOC <input type="checkbox"/> Solvent-based	_____	_____	<input type="checkbox"/> gallons (US) <input type="checkbox"/> gallons (UK) <input type="checkbox"/> cubic metres (m ³) <input type="checkbox"/> quarts (US) <input type="checkbox"/> ounces (US) <input type="checkbox"/> litres (L) <input type="checkbox"/> milliliters (mL)	_____
<input type="checkbox"/> Pre-Treatment Wash Primer	N/A	_____	_____	<input type="checkbox"/> gallons (US) <input type="checkbox"/> gallons (UK) <input type="checkbox"/> cubic metres (m ³) <input type="checkbox"/> quarts (US) <input type="checkbox"/> ounces (US) <input type="checkbox"/> litres (L) <input type="checkbox"/> milliliters (mL)	_____

Additional Material

Worksheet 1 – Table 1 (Continued). Select the coating product and type. Input the quantity used last year.

Coating product	Product type	Containers per year	Size of container	Units	Quantity used
<input type="checkbox"/> Adhesion Promoter	N/A	_____	_____	<input type="checkbox"/> gallons (US) <input type="checkbox"/> gallons (UK) <input type="checkbox"/> cubic metres (m ³) <input type="checkbox"/> quarts (US) <input type="checkbox"/> ounces (US) <input type="checkbox"/> litres (L) <input type="checkbox"/> milliliters (mL)	_____
<input type="checkbox"/> Colour Coating	<input type="checkbox"/> Water-based/ Low-VOC <input type="checkbox"/> Solvent-based	_____	_____	<input type="checkbox"/> gallons (US) <input type="checkbox"/> gallons (UK) <input type="checkbox"/> cubic metres (m ³) <input type="checkbox"/> quarts (US) <input type="checkbox"/> ounces (US) <input type="checkbox"/> litres (L) <input type="checkbox"/> milliliters (mL)	_____
<input type="checkbox"/> Colour Coating	<input type="checkbox"/> Water-based/ Low-VOC <input type="checkbox"/> Solvent-based	_____	_____	<input type="checkbox"/> gallons (US) <input type="checkbox"/> gallons (UK) <input type="checkbox"/> cubic metres (m ³) <input type="checkbox"/> quarts (US) <input type="checkbox"/> ounces (US) <input type="checkbox"/> litres (L) <input type="checkbox"/> milliliters (mL)	_____
<input type="checkbox"/> Truck Bed Liner Coating	N/A	_____	_____	<input type="checkbox"/> gallons (US) <input type="checkbox"/> gallons (UK) <input type="checkbox"/> cubic metres (m ³) <input type="checkbox"/> quarts (US) <input type="checkbox"/> ounces (US) <input type="checkbox"/> litres (L) <input type="checkbox"/> milliliters (mL)	_____
<input type="checkbox"/> Temporary Protective Coating	<input type="checkbox"/> Water-based/ Low-VOC <input type="checkbox"/> Solvent-based	_____	_____	<input type="checkbox"/> gallons (US) <input type="checkbox"/> gallons (UK) <input type="checkbox"/> cubic metres (m ³) <input type="checkbox"/> quarts (US) <input type="checkbox"/> ounces (US) <input type="checkbox"/> litres (L) <input type="checkbox"/> milliliters (mL)	_____

Additional Material

Worksheet 1 – Table 1 (Continued). Select the coating product and type. Input the quantity used last year.

Coating product	Product type	Containers per year	Size of container	Units	Quantity used
<input type="checkbox"/> Temporary Protective Coating	<input type="checkbox"/> Water-based/ Low-VOC <input type="checkbox"/> Solvent-based	_____	_____	<input type="checkbox"/> gallons (US) <input type="checkbox"/> gallons (UK) <input type="checkbox"/> cubic metres (m ³) <input type="checkbox"/> quarts (US) <input type="checkbox"/> ounces (US) <input type="checkbox"/> litres (L) <input type="checkbox"/> milliliters (mL)	_____
<input type="checkbox"/> Underbody Coating	N/A	_____	_____	<input type="checkbox"/> gallons (US) <input type="checkbox"/> gallons (UK) <input type="checkbox"/> cubic metres (m ³) <input type="checkbox"/> quarts (US) <input type="checkbox"/> ounces (US) <input type="checkbox"/> litres (L) <input type="checkbox"/> milliliters (mL)	_____
<input type="checkbox"/> Single-Stage Coating	<input type="checkbox"/> Water-based/ Low-VOC <input type="checkbox"/> Solvent-based	_____	_____	<input type="checkbox"/> gallons (US) <input type="checkbox"/> gallons (UK) <input type="checkbox"/> cubic metres (m ³) <input type="checkbox"/> quarts (US) <input type="checkbox"/> ounces (US) <input type="checkbox"/> litres (L) <input type="checkbox"/> milliliters (mL)	_____
<input type="checkbox"/> Single-Stage Coating	N/A	_____	_____	<input type="checkbox"/> gallons (US) <input type="checkbox"/> gallons (UK) <input type="checkbox"/> cubic metres (m ³) <input type="checkbox"/> quarts (US) <input type="checkbox"/> ounces (US) <input type="checkbox"/> litres (L) <input type="checkbox"/> milliliters (mL)	_____
<input type="checkbox"/> Clear Coating	<input type="checkbox"/> Water-based/ Low-VOC <input type="checkbox"/> Solvent-based	_____	_____	<input type="checkbox"/> gallons (US) <input type="checkbox"/> gallons (UK) <input type="checkbox"/> cubic metres (m ³) <input type="checkbox"/> quarts (US) <input type="checkbox"/> ounces (US) <input type="checkbox"/> litres (L) <input type="checkbox"/> milliliters (mL)	_____

Additional Material

Worksheet 1 – Table 1 (Continued). Select the coating product and type. Input the quantity used last year.

Coating product	Product type	Containers per year	Size of container	Units	Quantity used
<input type="checkbox"/> Clear Coating	<input type="checkbox"/> Water-based/ Low-VOC <input type="checkbox"/> Solvent-based	_____	_____	<input type="checkbox"/> gallons (US) <input type="checkbox"/> gallons (UK) <input type="checkbox"/> cubic metres (m ³) <input type="checkbox"/> quarts (US) <input type="checkbox"/> ounces (US) <input type="checkbox"/> litres (L) <input type="checkbox"/> milliliters (mL)	_____
<input type="checkbox"/> Clear Coat Hardener (Catalyst)	N/A	_____	_____	<input type="checkbox"/> gallons (US) <input type="checkbox"/> gallons (UK) <input type="checkbox"/> cubic metres (m ³) <input type="checkbox"/> quarts (US) <input type="checkbox"/> ounces (US) <input type="checkbox"/> litres (L) <input type="checkbox"/> milliliters (mL)	_____
<input type="checkbox"/> Clear Coat Hardener (Catalyst)	<input type="checkbox"/> Water-based/ Low-VOC <input type="checkbox"/> Solvent-based	_____	_____	<input type="checkbox"/> gallons (US) <input type="checkbox"/> gallons (UK) <input type="checkbox"/> cubic metres (m ³) <input type="checkbox"/> quarts (US) <input type="checkbox"/> ounces (US) <input type="checkbox"/> litres (L) <input type="checkbox"/> milliliters (mL)	_____
<input type="checkbox"/> Clear Coat Reducer	N/A	_____	_____	<input type="checkbox"/> gallons (US) <input type="checkbox"/> gallons (UK) <input type="checkbox"/> cubic metres (m ³) <input type="checkbox"/> quarts (US) <input type="checkbox"/> ounces (US) <input type="checkbox"/> litres (L) <input type="checkbox"/> milliliters (mL)	_____
<input type="checkbox"/> Clear Coat Reducer	<input type="checkbox"/> Water-based/ Low-VOC <input type="checkbox"/> Solvent-based	_____	_____	<input type="checkbox"/> gallons (US) <input type="checkbox"/> gallons (UK) <input type="checkbox"/> cubic metres (m ³) <input type="checkbox"/> quarts (US) <input type="checkbox"/> ounces (US) <input type="checkbox"/> litres (L) <input type="checkbox"/> milliliters (mL)	_____

Additional Material

Worksheet 1 – Table 1 (Continued). Select the coating product and type. Input the quantity used last year.

Coating product	Product type	Containers per year	Size of container	Units	Quantity used
<input type="checkbox"/> Surface Cleaner	<input type="checkbox"/> Water-based/ Low-VOC <input type="checkbox"/> Solvent-based	_____	_____	<input type="checkbox"/> gallons (US) <input type="checkbox"/> gallons (UK) <input type="checkbox"/> cubic metres (m ³) <input type="checkbox"/> quarts (US) <input type="checkbox"/> ounces (US) <input type="checkbox"/> litres (L) <input type="checkbox"/> milliliters (mL)	_____
<input type="checkbox"/> Surface Cleaner	N/A	_____	_____	<input type="checkbox"/> gallons (US) <input type="checkbox"/> gallons (UK) <input type="checkbox"/> cubic metres (m ³) <input type="checkbox"/> quarts (US) <input type="checkbox"/> ounces (US) <input type="checkbox"/> litres (L) <input type="checkbox"/> milliliters (mL)	_____

Worksheet 1 – Table 2. Input the quantity of shop towels used last year.

Shop towels used?	Quantity of shop towels used	Units
Example: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	_____	<input checked="" type="checkbox"/> units <input type="checkbox"/> lbs <input type="checkbox"/> grams
<input type="checkbox"/> Yes <input type="checkbox"/> No	_____	<input type="checkbox"/> units <input type="checkbox"/> lbs <input type="checkbox"/> grams

Worksheet 1 – Table 3. Input the VOC control efficiency of your equipment.

Do you operate any VOC emission control equipment?	Efficiency (%)
Example: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	_____ %
<input type="checkbox"/> Yes <input type="checkbox"/> No	_____ %

Additional Material

Worksheet 2 – Products used for cleaning

Worksheet 2 –Table 1. Input the quantity and VOC content of cleaning products used at your facility

Cleaning Material	Volume used	Units	VOC Content from MSDS	Units
Example: Paint gun cleaner (concentrate)	<u>7</u>	<input checked="" type="checkbox"/> litres (L)	<u>962</u>	<input checked="" type="checkbox"/> grams/ litre
_____	_____	<input type="checkbox"/> gallons (US) <input type="checkbox"/> gallons (UK) <input type="checkbox"/> cubic metres (m ³) <input type="checkbox"/> quarts (US) <input type="checkbox"/> ounces (US) <input type="checkbox"/> litres (L) <input type="checkbox"/> milliliters (mL)	_____	<input type="checkbox"/> lbs/gallon (US) <input type="checkbox"/> grams/ litre <input type="checkbox"/> % w/w and _____ Specific gravity (SG)
_____	_____	<input type="checkbox"/> gallons (US) <input type="checkbox"/> gallons (UK) <input type="checkbox"/> cubic metres (m ³) <input type="checkbox"/> quarts (US) <input type="checkbox"/> ounces (US) <input type="checkbox"/> litres (L) <input type="checkbox"/> milliliters (mL)	_____	<input type="checkbox"/> lbs/gallon (US) <input type="checkbox"/> grams/ litre <input type="checkbox"/> % w/w and _____ Specific gravity (SG)
_____	_____	<input type="checkbox"/> gallons (US) <input type="checkbox"/> gallons (UK) <input type="checkbox"/> cubic metres (m ³) <input type="checkbox"/> quarts (US) <input type="checkbox"/> ounces (US) <input type="checkbox"/> litres (L) <input type="checkbox"/> milliliters (mL)	_____	<input type="checkbox"/> lbs/gallon (US) <input type="checkbox"/> grams/ litre <input type="checkbox"/> % w/w and _____ Specific gravity (SG)

Additional Material

Worksheet 2 – Table 2. Input the name of the transferred cleaning material, HWIN classification, offsite transfer company, quantity of material transferred, and VOC content.

Transferred Material	HWIN Classification	Offsite Transfer Company	Volume Transferred	Units	VOC Content from MSDS	Units
Example: Automotive Surface Degreaser	<u>212 - Aliphatic Solvents</u>	<u>Environmental Solutions</u>	<u>150</u>	<input checked="" type="checkbox"/> litres (L)	<u>7</u>	<input checked="" type="checkbox"/> grams/ litre
_____	_____	_____	_____	<input type="checkbox"/> gallons (US) <input type="checkbox"/> gallons (UK) <input type="checkbox"/> cubic metres (m ³) <input type="checkbox"/> quarts (US) <input type="checkbox"/> ounces (US) <input type="checkbox"/> litres (L) <input type="checkbox"/> milliliters (mL)	_____	<input type="checkbox"/> lbs/gallon (US) <input type="checkbox"/> grams/ litre <input type="checkbox"/> % w/w and _____ Specific gravity (SG)
_____	_____	_____	_____	<input type="checkbox"/> gallons (US) <input type="checkbox"/> gallons (UK) <input type="checkbox"/> cubic metres (m ³) <input type="checkbox"/> quarts (US) <input type="checkbox"/> ounces (US) <input type="checkbox"/> litres (L) <input type="checkbox"/> milliliters (mL)	_____	<input type="checkbox"/> lbs/gallon (US) <input type="checkbox"/> grams/ litre <input type="checkbox"/> % w/w and _____ Specific gravity (SG)

Additional Material

Worksheet 3 – Other chemical usage

Skip this worksheet if no other chemicals are used at your facility.

Worksheet 3 –Table 1. Input the quantity and VOC content of other chemicals used at your facility

Material	Volume used	Units	VOC Content from MSDS	Units
Example: Plastic and emblem adhesive	<u>1</u>	<input checked="" type="checkbox"/> litres (L)	<u>962</u>	<input checked="" type="checkbox"/> grams/ litre
_____	_____	<input type="checkbox"/> gallons (US) <input type="checkbox"/> gallons (UK) <input type="checkbox"/> cubic metres (m ³) <input type="checkbox"/> quarts (US) <input type="checkbox"/> ounces (US) <input type="checkbox"/> litres (L) <input type="checkbox"/> milliliters (mL)	_____	<input type="checkbox"/> lbs/gallon (US) <input type="checkbox"/> grams/ litre <input type="checkbox"/> % w/w and Specific gravity (SG)
_____	_____	<input type="checkbox"/> gallons (US) <input type="checkbox"/> gallons (UK) <input type="checkbox"/> cubic metres (m ³) <input type="checkbox"/> quarts (US) <input type="checkbox"/> ounces (US) <input type="checkbox"/> litres (L) <input type="checkbox"/> milliliters (mL)	_____	<input type="checkbox"/> lbs/gallon (US) <input type="checkbox"/> grams/ litre <input type="checkbox"/> % w/w and Specific gravity (SG)
_____	_____	<input type="checkbox"/> gallons (US) <input type="checkbox"/> gallons (UK) <input type="checkbox"/> cubic metres (m ³) <input type="checkbox"/> quarts (US) <input type="checkbox"/> ounces (US) <input type="checkbox"/> litres (L) <input type="checkbox"/> milliliters (mL)	_____	<input type="checkbox"/> lbs/gallon (US) <input type="checkbox"/> grams/ litre <input type="checkbox"/> % w/w and Specific gravity (SG)
_____	_____	<input type="checkbox"/> gallons (US) <input type="checkbox"/> gallons (UK) <input type="checkbox"/> cubic metres (m ³) <input type="checkbox"/> quarts (US) <input type="checkbox"/> ounces (US) <input type="checkbox"/> litres (L) <input type="checkbox"/> milliliters (mL)	_____	<input type="checkbox"/> lbs/gallon (US) <input type="checkbox"/> grams/ litre <input type="checkbox"/> % w/w and Specific gravity (SG)

Additional Material

Worksheet 4 – Sanding

Skip this worksheet if sanding is not performed at your facility.

Worksheet 4 – Table 1. Input the airflow rate and operating schedule of the dust collectors at your facility.

Airflow rate	Airflow rate units	Number of Operating Units	How often are dust collectors operating?		
			Hours per day	Days per week	Weeks per year
Example: <u>2,000</u>	<input checked="" type="checkbox"/> cfm <input type="checkbox"/> m ³ /s <input type="checkbox"/> L/m <input type="checkbox"/> L/s <input type="checkbox"/> m ³ /h	<u>1</u>	<u>5</u>	<u>5</u>	<u>50</u>
<u> </u>	<input type="checkbox"/> cfm <input type="checkbox"/> m ³ /s <input type="checkbox"/> L/m <input type="checkbox"/> L/s <input type="checkbox"/> m ³ /h	<u> </u>	<u> </u>	<u> </u>	<u> </u>
<u> </u>	<input type="checkbox"/> cfm <input type="checkbox"/> m ³ /s <input type="checkbox"/> L/m <input type="checkbox"/> L/s <input type="checkbox"/> m ³ /h	<u> </u>	<u> </u>	<u> </u>	<u> </u>

If dust collectors are not present, complete Worksheet 4 – Table 2.

Worksheet 4 – Table 2. Input the mass of abrasive blasting material used.

Mass of abrasive blasting material	Units
Example: <u>20</u>	<input checked="" type="checkbox"/> lbs <input type="checkbox"/> kilograms (kg) <input type="checkbox"/> grams (g)
<u> </u>	<input type="checkbox"/> lbs <input type="checkbox"/> kilograms (kg) <input type="checkbox"/> grams (g)

Additional Material

Worksheet 5 – Transferred materials

Skip this worksheet if no chemicals are transferred offsite for treatment/ disposal by a waste collection company.

Worksheet 5 – Table 1. Input the name of the transferred material, HWIN classification, offsite transfer company, quantity of material used, and VOC content.

Transferred Material	HWIN Classification	Offsite Transfer Company	Volume Transferred	Units	VOC Content from MSDS	Units
Example: Spent colour coating	<u>145 – Wastes from the use of paints, pigments and coatings</u>	<u>Environmental Solutions</u>	<u>50</u>	<input checked="" type="checkbox"/> litres (L)	<u>420</u>	<input checked="" type="checkbox"/> grams/ litre
_____	_____	_____	_____	<input type="checkbox"/> gallons (US) <input type="checkbox"/> gallons (UK) <input type="checkbox"/> cubic metres (m ³) <input type="checkbox"/> quarts (US) <input type="checkbox"/> ounces (US) <input type="checkbox"/> litres (L) <input type="checkbox"/> milliliters (mL)	_____	<input type="checkbox"/> lbs/gallon (US) <input type="checkbox"/> grams/ litre <input type="checkbox"/> % w/w and _____ Specific gravity (SG)
_____	_____	_____	_____	<input type="checkbox"/> gallons (US) <input type="checkbox"/> gallons (UK) <input type="checkbox"/> cubic metres (m ³) <input type="checkbox"/> quarts (US) <input type="checkbox"/> ounces (US) <input type="checkbox"/> litres (L) <input type="checkbox"/> milliliters (mL)	_____	<input type="checkbox"/> lbs/gallon (US) <input type="checkbox"/> grams/ litre <input type="checkbox"/> % w/w and _____ Specific gravity (SG)

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.

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

Additional Material

The ChemTRAC calculator Calculations screen

The Calculations screen provides the calculations based on the information provided in the 5 input screens. It also includes details on the default VOC content, and emission factors for calculating the use and release of substances. An indication of emission factor data quality is also provided. You do not need to enter any information on this screen.

However, the default VOC contents and emission factors can be modified if site-specific information is available. If default values or emission factors are modified, be sure that they are entered in appropriate units.

All information and formulae presented in the Calculations screen are for reference only. Other than when using product-specific VOC contents and site-specific emissions factors, they should not be modified in any way.

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

Product	Product Type*	Max. VOC Content (kg/L)	Quantity Used (L/yr)	Quantity Used (kg/yr)	Quantity Released (kg/yr)	Data Quality
Primer Surfacer	2	0.118	0	0.0	0.0	E
Primer Surfacer	3	0.250	0	0.0	0.0	E
Primer Sealer	2	0.107	0	0.0	0.0	E
Primer Sealer	3	0.340	0	0.0	0.0	E
Epoxy Primer (Part A)	2	0.190	0	0.0	0.0	E
Epoxy Primer (Part A)	3	0.250	0	0.0	0.0	E
Epoxy Primer (Catalyst/Activator)	2	0.204	0	0.0	0.0	E
Epoxy Primer (Catalyst/Activator)	3	0.250	0	0.0	0.0	E
Pre-Treatment Wash Primer	n/a	0.660	0	0.0	0.0	E
Adhesion Promoter	n/a	0.616	0	0.0	0.0	E
Colour Coating	2	0.420	0	0.0	0.0	E
Colour Coating	3	0.420	0	0.0	0.0	E
Truck Bed Liner Coating	n/a	0.281	0	0.0	0.0	E
Temporary Protective Coating	2	0.060	0	0.0	0.0	E
Temporary Protective Coating	3	0.060	0	0.0	0.0	E
Underbody Coating	n/a	0.264	0	0.0	0.0	E
Single-Stage Coating	2	0.420	0	0.0	0.0	E
Single-Stage Coating	3	0.420	0	0.0	0.0	E
Clear Coating	2	0.250	0	0.0	0.0	E
Clear Coating	3	0.250	0	0.0	0.0	E

The Default Max. VOC Content (kg/L) can be modified by the user

*2 = water-based/ Low VOC
*3 = solvent-based

Additional Material

Product	Product Type*	Max. VOC Content (kg/L)	Quantity Used (L/yr)	Quantity Used (kg/yr)	Quantity Released (kg/yr)	Data Quality
Clear Coat Hardener (Catalyst)	2	0.250	0	0.0	0.0	E
Clear Coat Hardener (Catalyst)	3	0.250	0	0.0	0.0	E
Clear Coat Reducer	2	0.250	0	0.0	0.0	E
Clear Coat Reducer	3	0.250	0	0.0	0.0	E
Surface Cleaner	2	0.025	0	0.0	0.0	E
Surface Cleaner	3	0.050	0	0.0	0.0	E
Shop Rags Used ^{**}	units	0.011	n/a	0.0	0.0	E
Total VOCs "Processed"				0	0	E
Total VOCs "Otherwise Used"				0	0	E

The Default Max. VOC Content (kg/L) can be modified by the user

*2 = water-based/ Low VOC
 *3 = solvent-based
 ** Max. VOC Content of Shop rags is expressed in lb/ 1000 lb of rags

Sanding Operations

Number of Units	Air Flow Rate (cfm)	Operating Schedule (hours/year)	PM _{2.5} Emission Rate (kg/yr) ^{a,b}
0	0	0	0

PM Emission Factor (mg/m ³) ^a
40

The default PM emission factor can be modified by the user

^aConcentration of particulates in the air due to sanding = 40 mg/m³

^bPercentage of total particulates that are less than 2.5 microns = 88.5%

Additional Material

The ChemTRAC calculator References screen

The Reference screen describes the sources of the assumptions used in the Calculations screen. 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.



References

Version 3.1 Last Updated: November 28, 2012 CL, ZI, & DM

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

VOC contents for the products listed were estimated using MSDSs for similar products from the following companies:

- Magnet Paint and Shellac Co. Inc.
<http://www.magnetpaints.com/aboutus.asp>
- Martin Senour Paints
<http://www.martinsenour-autopaint.com/>
- TCP Global
<http://www.tcpglobal.com/>
- Duplicolor
<http://www.duplicolor.com/index.html>
- ABI
<http://www.autobodybrands.com/>
- Sherwin-Williams Automotive Finishes Corp.
<http://www.sherwin-automotive.com/>
- Pro Form Products Ltd.
<http://www.proformproducts.com/en/portal/whatsnew/>
- 3M
<http://www.3m.com/index.html?change=true>
- General Chemical Industrial products
<http://www.genchem.com/default.asp>
- Keystone Automotive Industries Inc.
<http://www.keystone-auto.com/>
- DuPont Performance Coatings
<http://pc.dupont.com/>
- Spies Hecker
<http://www.spieshecker.com/portal/>
- AkzoNobel
<http://www.akzonobel.com/>
- Permatex
<http://www.permatex.com/>

Additional Material



References

Version 3.1 Last Updated: November 28, 2012 CL, ZI, & DM

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

CPS Coatings Inc.

<http://www.cpscoatings.net/>

Matrix System Automotive Finishes

<http://www.matrixsystem.com/>

Evercoat

<http://www.evercoat.com/>

Cumberland Products Inc.

<http://www.cumberlandproductsinc.com/>

Farwest Paint Manufacturing Co.

<http://www.farwestpaint.com>

Nexa Autocolor

<https://corporateportal.ppg.com/na/refinish/nexaautocolor>

PPG Automotive Refinish

<https://corporateportal.ppg.com/NA/Refinish/PPGRefinish/EN>

Pacific Coast Lacquer

<http://www.pclautomotive.com/>

Rubbert Seal Products

<http://www.medallionrefinish.com/>

Henry Company

<http://www.henry.com/Home.9.0.html>

Urethane Supply Company

<http://www.urethanesupply.com/>

Daubert Chemical Company Inc.

<http://www.daubertchemical.com/main.taf?p=0,1,5>

Additional VOC content limits for automotive refinishing products are provided in "Volatile Organic Compound (VOC) Concentration Limits for Automotive Refinishing Products Regulations", under the Canadian Environmental Protection Act, published in the Canada Gazette, July 8, 2009

<http://www.gazette.gc.ca/rp-pr/p2/2009/2009-07-08/html/sor-dors197-eng.html>

VOC Emissions from Shop Rags/Towels: Permitting Analysis, G&K Services, Co. Montgomery Plant, Montgomery, Montgomery County, Alabama, Facility No. 209-0100, Synthetic Minor Operating Permit No. X001

<http://adem.alabama.gov/newsEvents/notices/may12/pdfs/5gandk.pdf>

Cleaning Solution Emission Factor. 50% emission factor for low vapor pressure (<10 mm Hg at 20°C) used with shop towels kept in closed containers

<http://www.epa.gov/ttn/atw/pte/tekmarsh.pdf>

Sanding Operations:

Heitbrink WA, Cooper TC, Edmonds MA. (1994). Evaluation of ventilated sanders in the autobody repair industry. Am. Ind. Hyg. Assoc. J. 55(8), 756-759.

PM size fractions are provided in the South Coast Air Quality Management District Document "Final – Methodology to Calculate Particulate Matter (PM) 2.5 and PM_{2.5} Significance Thresholds", 2006

Emission factor for abrasive blasting in the absence of a dust collector:

<http://www.epa.gov/ttn/chief/ap42/ch13/final/c13s02-6.pdf>



References

Version 3.1 Last Updated: November 28, 2012 CL, ZI, & DM

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

Definitions ¹

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.

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



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Additional Material

Default VOC contents for auto body refinishing products

The ChemTRAC calculator for auto body refinishing is based on published VOC contents of different products used as part of a typical facility's operations. The use of VOCs and their controlled release to air from the facility are calculated as shown below.

Mass of VOCs Used (kg)

$$= [\text{Mass of Product Used (L)}] \times [\text{Default VOC content (g/L)}] \times [1 \text{ kg} / 1000 \text{ g}]$$

Mass of VOCs Released (kg)

$$= [\text{Mass of VOCs Used (kg)}] \times [1 - \text{VOC control efficiency}]$$

Table 4 presents the default VOC contents of products listed in the "Paint Usage" screen of the auto body refinishing calculator. If a product-specific VOC content is available from the supplier's MSDS sheet, the value can be entered in the Calculations sheet of the calculator.

Table 4: Default VOC contents of products listed in the "Paint Usage" screen

Product	Product Type	Default Max. VOC Content (kg/L)
Primer Surfacer	Water-based/ Low VOC	0.118
Primer Surfacer	Solvent-based	0.250
Primer Sealer	Water-based/ Low VOC	0.107
Primer Sealer	Solvent-based	0.340
Epoxy Primer (Part A)	Water-based/ Low VOC	0.190
Epoxy Primer (Part A)	Solvent-based	0.250
Epoxy Primer (Catalyst/Activator)	Water-based/ Low VOC	0.204
Epoxy Primer (Catalyst/Activator)	Solvent-based	0.250
Pre-Treatment Wash Primer	n/a	0.660
Adhesion Promoter	n/a	0.616
Colour Coating	Water-based/ Low VOC	0.420
Colour Coating	Solvent-based	0.420
Truck Bed Liner Coating	n/a	0.281
Temporary Protective Coating	Water-based/ Low VOC	0.060
Temporary Protective Coating	Solvent-based	0.060
Underbody Coating	n/a	0.264
Single-Stage Coating	Water-based/ Low VOC	0.420
Single-Stage Coating	Solvent-based	0.420
Clear Coating	Water-based/ Low VOC	0.250
Clear Coating	Solvent-based	0.250
Clear Coat Hardener (Catalyst)	Water-based/ Low VOC	0.250
Clear Coat Hardener (Catalyst)	Solvent-based	0.250
Clear Coat Reducer	Water-based/ Low VOC	0.250
Clear Coat Reducer	Solvent-based	0.250
Surface Cleaner	Water-based/ Low VOC	0.025
Surface Cleaner	Solvent-based	0.050

Additional Material

Emission factors for auto body refinishing

The ChemTRAC calculator for auto body refinishing also uses emission factors to determine the amount of a specific substance (e.g. Particulate Matter 2.5) emitted by a specific activity (e.g. collecting a cubic metre of air from sanding). Emission factors are based on published estimates of the emissions associated with different industrial processes.

If site-specific emission factors are available for the facility or processes, they can be entered in the Calculations sheet of the calculator.

Table 5. Default VOC contents of products listed in the "Paint Usage" screen

Source	Substance	Emission Factor
Shop Rags	Volatile Organic Compounds Total	0.011 g / g of shop rag* * it is assumed that 1 rag weighs 50 g
Dust collectors – sanding	All particulate matter (PM)	40 mg/m ³
	% PM _{2.5}	88.5
	Particulate matter 2.5 (PM _{2.5})	35.4 mg/m ³
Sanding without dust collectors	All particulate matter (PM)	0.69 kg/ 1000 kg of abrasive material
	% PM _{2.5}	88.5
	Particulate matter 2.5 (PM _{2.5})	0.61 kg/ 1000 kg of abrasive material

The box below illustrates how to calculate VOCs processed and released to air from the sample primer surfacer in [Worksheet 1 – Table 1](#) and the sample VOC control efficiency in [Worksheet 1 – Table 3](#).

Example 1: Using default VOC content and VOC emission control efficiency to estimate VOC emissions applying a primer surfacer.

In Worksheet 1, we use 100 Litres of a sample water-based primer surfacer.

The default VOC content for the water-based primer surfacer is 0.118 kg/L

The VOC control efficiency of the paint spray booth is 90%.

Total mass of VOCs processed

$$= [\text{Mass of primer-surfacer used (L)}] \times [\text{VOC Content (kg/L)}]$$

$$= [100 \text{ L}] \times [0.118 \text{ kg/L}]$$

$$= 11.8 \text{ kg of VOCs}$$

Total mass of VOCs released to air

$$= [\text{Mass of VOCs processed (L)}] \times [1 - \text{VOC control efficiency}]$$

$$= [11.8 \text{ kg}] \times [1 - 0.90]$$

$$= 1.18 \text{ kg of VOCs}$$

Additional Material

The box below illustrates how to calculate PM_{2.5} emissions from the sample dust collector in [Worksheet 4 – Table 1](#).

Example 2: Using emission factors to estimate PM_{2.5} manufacture and release to air from sanding

In Worksheet 4, we use a sample dust collector with an airflow rate of 2000 cubic feet per minute (cfm). This amounts to an airflow rate of 0.914 **cubic metres per second** (cms).

The dust collector is in operation 5 hours per day, 5 days per week, and 50 weeks per year. This amounts to 4,500,000 seconds of operation per year.

The emissions factor for sanding of 35.4 mg/m³ amounts to 0.0354 kg per m³.

Total manufacture of PM_{2.5} from sanding

$$\begin{aligned} &= [\text{Flow (m}^3/\text{second)}] \times [\text{Seconds of operation}] \times [\text{Emissions factor (kg/m}^3)] \\ &= \mathbf{0.914 \text{ m}^3 \text{ per second} * 7,200,000 \text{ seconds per year} * 0.0177 \text{ kg per m}^3} \\ &= \mathbf{120.3 \text{ kg of PM}_{2.5}} \end{aligned}$$

Total emissions of PM_{2.5} from sanding

$$\begin{aligned} &= [\text{Flow (m}^3/\text{second)}] \times [\text{Seconds of operation}] \times [\text{Emissions factor (kg/m}^3)] \\ &= \mathbf{0.914 \text{ m}^3 \text{ per second} * 7,200,000 \text{ seconds per year} * 0.0177 \text{ kg per m}^3} \\ &= \mathbf{120.3 \text{ kg of PM}_{2.5}} \end{aligned}$$

Appendix C. Combining the auto refinishing 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.¹⁰ 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 them to the corresponding reporting thresholds.

¹⁰ The Calculation of Totals calculator can be found under the Calculation of Totals bullet at <http://www.toronto.ca/health/chemtrac/industries/autobody.htm>

Additional Material

Group	Chemical Name	Quantity (kg/yr)				Quantity (kg/yr)				Totals to be compared with the threshold (kg/yr)	Mass Reporting Threshold (kg/yr)	Reportable?
		Manuf-actured	Proces-sed	Otherwise Used	Released to Air	Manuf-actured	Proces-sed	Otherwise Used	Released to Air			
A	Acetaldehyde*									0	100	No
	Acrolein*									0	100	No
	Benzene*									0	100	No
	1,3-Butadiene*									0	100	No
	Carbon tetrachloride*									0	100	No
	Chloroform (Trichloromethane)*									0	100	No
	Chromium (non-hexavalent) ¹									0	100	No
	1,2-Dibromoethane (Ethylene dibromide)									0	100	No
	1,4-Dichlorobenzene*									0	100	No
	1,2-Dichloroethane (Ethylene dichloride)*	Enter values from the output summary of your first calculator here				Enter values from the output summary of your second calculator here				0	100	No
	Dichloromethane (Methylene chloride)									0	100	No
	Formaldehyde*									0	100	No
	Manganese ¹									0	10	No
	Nickel ¹									0	100	No
	Tetrachloroethylene (Perchloroethylene)									0	100	No
	Trichloroethylene*									0	100	No
	Vinyl chloride									0	100	No
	Cadmium ¹									0	1	No
	Chromium (hexavalent) ¹									0	10	No
	Lead ¹									0	10	No
Mercury ¹									0	1	No	
B	Total polycyclic aromatic hydrocarbons (PAHs)*									0	10	No
C	Nitrogen oxides (NOx)									0	200	No
	Particulate matter 2.5 (PM _{2.5})									0	30	No
	Total Volatile organic compounds (VOCs) ²									0	100	No

ETC

Additional Material

Group	Chemical Name	Totals to be compared with the threshold (kg/yr)	Mass Reporting Threshold (kg/yr)	Reportable?	To be reported			
					Total Manufactured	Total Processed	Total Otherwise Used	Total Released to Air
					(kg/yr)	(kg/yr)	(kg/yr)	(kg/yr)
A	Acetaldehyde*	0	100	No	---	---	---	---
	Acrolein*	0	100	No	---	---	---	---
	Benzene*	0	100	No	---	---	---	---
	1,3-Butadiene*	0	100	No	---	---	---	---
	Carbon tetrachloride*	0	100	No	---	---	---	---
	Chloroform (Trichloromethane)*	0	100	No	---	---	---	---
	Chromium (non-hexavalent) ¹	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 ¹	0	10	No	---	---	---	---
	Nickel ¹	0	100	No	---	---	---	---
	Tetrachloroethylene (Perchloroethylene)	0	100	No	---	---	---	---
	Trichloroethylene*	0	100	No	---	---	---	---
	Vinyl chloride	0	100	No	---	---	---	---
	Cadmium ¹	0	1	No	---	---	---	---
	Chromium (hexavalent) ¹	0	10	No	---	---	---	---
	Lead ¹	0	10	No	---	---	---	---
Mercury ¹	0	1	No	---	---	---	---	
B	Total polycyclic aromatic hydrocarbons (PAHs)*	0	10	No	---	---	---	---
C	Nitrogen oxides (NOx)	0	200	No	---	---	---	---
	Particulate matter 2.5 (PM _{2.5})	0	30	No	---	---	---	---
	Total Volatile organic compounds (VOCs) ²	0	100	No	---	---	---	---

ETC

Additional Material

The total combined use and release of substances (whether only from the auto refinishing calculator, 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 6 below.

Table 6. 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 (NOx)	200 ^c	N/A
Particulate Matter 2.5 (PM _{2.5})	30 ^c	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 ^c	N/A

Notes:

- N/A = not applicable
- The concentration threshold % w/w is not relevant to the emissions quantified using the ChemTRAC calculator for Commercial Wood office furniture manufacturers
- Released to air

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 http://www.toronto.ca/health/chemtrac/business_resources.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)

- Consider the effects of pollution control devices (e.g. filter) in the emission calculations.

Additional Material

- 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.