United States Environmental Protection Agency

Office of Pollution Prevention and Toxics
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EPCRA Section 313

Look-up Tables for Estimating Toxic Release Inventory Air Emissions from Chemical Distribution Facilities

Section 313 of the Emergency Planning and Community Right-to-Know Act

Toxic Chemical Release Inventory

Preface

The Environmental Protection Agency (EPA) is making this document available to help facilities in Standard Industrial Classification 5169 (chemical and allied products -- wholesale) in calculating air emissions that are required to be reported under Section 313 of the Emergency Planning and Community Right-to-Know Act (EPCRA, or Title III of the Superfund Amendments and Reauthorization Act of 1986, Public Law 99-499). The EPCRA Section 313 program is also referred to as the Toxics Release Inventory or TRI.

This document is intended solely for guidance and does not alter any statutory or regulatory requirements. The document should be used in conjunction with the statute and regulations but does not supersede them.

This document is intended to supplement Toxic Chemical Release Inventory Forms and Instructions (Revised 1998 Version) and should be used in conjunction with the EPCRA Section 313 Industry Guidance Chemical Distribution Facilities (EPA 745-B-99-005) .

The look-up tables in this document were developed for the National Association of Chemical Distributors[1] by the IT Corporation[2] (Project number 776338-04). The methodology used to derive these look-up tables was reviewed by EPA=s Toxics Release Inventory Branch. EPA believes that in the limited situations described in this document that the look-up tables provide reasonable estimates of certain air releases. These look-up tables are intended to provide simplified estimations of air releases from liquid bulk storage, blending, and container filling operations based primarily on annual chemical throughput quantity. These tables provide individual chemical distributors nationwide with a simplified method for deriving these values.

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1.0 Introduction and Background

By July 1, 1999, hundreds of chemical distributors throughout the country will be required, for the first time, to submit estimates of toxic chemical releases and other waste management quantities to the U.S. Environmental Protection Agency (EPA) under Section 313 of the Emergency Planning and Community Right-to-Know Act (EPCRA) and Section 6607 of the Pollution Prevention Act (PPA). Also known as the Toxic Release Inventory (TRI), EPCRA Section 313 and PPA Section 6607 require individual facilities that exceed certain thresholds to prepare estimates of annual quantities of specifically listed chemicals released to air, water, or land on-site, otherwise managed as waste on-site or transferred off site to other facilities for further waste management. While amounts of listed toxic chemicals may be released or otherwise managed as waste in many different forms, such as spills to land, transfers to a POTW, etc., it is expected that the majority of wastes at chemical distribution facilities will be in the form of fugitive or stack release to air.

To assist their members with TRI reporting, the National Association of Chemical Distributors (NACD) contracted with IT Corporation (IT) to develop look-up tables for simplifying estimation of air releases from liquid bulk storage, blending, and container filling operations based primarily on annual chemical throughput quantity. The methodology used to derive these look-up tables was reviewed by EPA=s Toxics Release Inventory Branch and modifications were made at the Agency=s request. EPA believes that in the limited situations described in this document the look-up tables provide reasonable estimates of certain air releases.

These tables provide individual chemical distributors nationwide with a simplified method for deriving these values rather than applying algorithms conventionally used for estimating air emissions from similar types of operations. It is anticipated that the use of these tables will also reduce the likelihood of reporting errors associated with misapplication of the conventional estimation approaches which can sometimes be fairly complicated.

Figure 1 is a diagram of liquid bulk storage, blending, and container filling operations that identifies air emission sources from these common operations. The conventional approach for estimating annual air emissions from these sources is to utilize AP-42 algorithms for storage tank emissions (A3 in Figure 1), Synthetic Organic Chemical Manufacturing Industry (SOCMI)

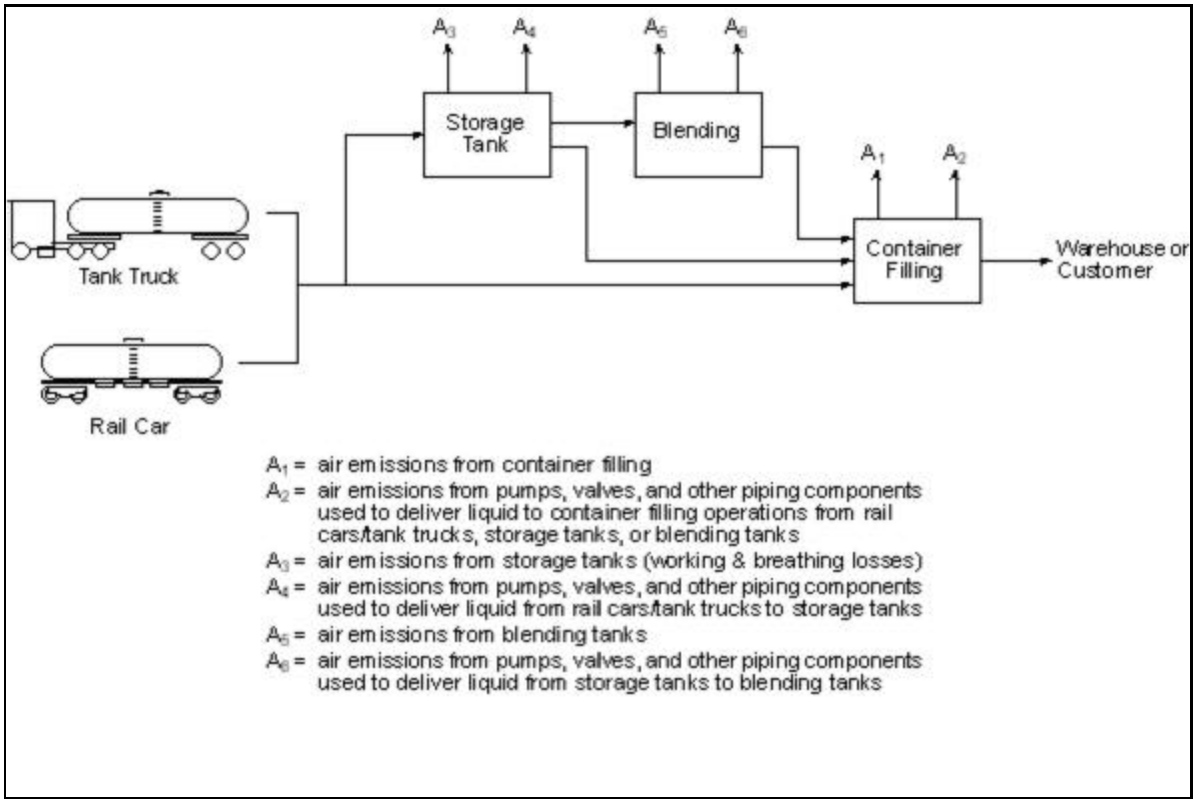
emission factors for leaks from piping components (A2, A4, and A6 in Figure 1), and a standard engineering calculation for estimating releases during liquids blending and container filling (A5 and A1 in Figure 1).

The premise of the look-up table approach is that liquid bulk storage and container filling operations are very similar among chemical distribution facilities, especially in terms of air emission sources and approaches available for estimating air emissions. IT Corporation used conventional AP-42 and SOCMI algorithms to estimate air emissions from typical variations of the liquid bulk storage and container filling operations at chemical distribution facilities. The results were consolidated into a tabular format as a function of chemical throughput.

Appendix A of this document contains the Look-up Tables for 54 EPCRA section 313 chemicals. Prototypes of these tables were developed, field tested, and modified by IT in the latter part of 1998, with on-going input from EPA and NACD. Appendix B contains Look-up Table correction factors for numerous cities (i.e., City Correction Factors) that must be used in conjunction with the Look-up Tables to compensate for climate variations across the country.

Section 2 of this document summarizes the applicability of the Look-up Tables - indicating when they should be used and when they should not be used. The reader is urged to carefully review this section to understand the limitations of the tables and to ensure that they apply to his or her specific situation. Section 3 presents detailed instructions on how to use the Look-up Tables and where the results from the tables provide values to assist you in determining which form to use (Form R or Form A) and if Form R is required, where to enter the certain values.

FIGURE 1: LIQUID BULK STORAGE AND CONTAINER FILLING PROCESS



2.0 Applicability - When to Use the Look-up Tables and When Not to Use the Look-up Tables

The Look-up Tables were designed to facilitate estimation of chemical releases to air from a common operation among chemical distributors - liquid bulk storage and container filling. As outlined in Figure 1, there are three variations of this process.

1. Unloading of the chemical by pumping from a railcar or tanker truck directly into shipping containers such as tank trucks, 55-gallon drums, 5-gallon pails, or 1-gallon cans.

2. Unloading of the chemical by pumping from a railcar or tanker truck to a dedicated fixed-roof, outdoor storage tank and then pumping the chemical from the storage tank into shipping containers such as tank trucks, 55-gallon drums, 5-gallon pails, or 1-gallon cans.

3. Unloading of the chemical by pumping from a railcar or tanker truck to a dedicated fixed-roof, outdoor storage tank and then pumping the chemical to a closed, indoor blending tank on a batch basis, then pumping the chemical from the indoor blending tank into shipping containers such as tank trucks, 55-gallon drums, 5-gallon pails, or 1-gallon cans.

When processing liquid bulk chemicals at your facility, you may utilize any and all of these process variations depending on the chemical in question. The Look-up Tables can be used to address air emissions from any combination of these three process variations. However, the following caveats must be recognized to prevent an inappropriate use of the Look-up Tables.

- The Look-up Tables apply only to air releases. Releases of EPCRA section 313 chemicals to land and water, as well as other on-site waste management activities and off-site transfers for further waste management, are not covered under this table, but must be included as part of any Form R submittal.

- The Look-up Tables apply only to the liquid bulk storage and container filling process as described above. You may generate air releases of EPCRA section 313 chemicals from other sources at your facility (e.g., spills and other chemical processing). These estimates must be included with air release estimates developed using the Look-up Tables.

- The Look-up Tables do not apply to the repackaging of gases or pressurized liquids.

- If Appendix A does not contain a Look-up Table for a chemical for which you must prepare a report, you must rely on more conventional air release estimation techniques such as AP-42 algorithms and SOCMI emission factors.

- The Look-up Tables assume that you are not using air emission control devices (e.g., scrubbers, thermal oxidizers, etc) that would reduce air releases from the individual sources noted in Figure 1. However, the Look-up Tables can be used in these situations to estimate the amount of a chemical entering the control device. The chemical releases from the control device can then be estimated by applying the estimated control efficiency of the control device to the estimated amount entering the device.

- There are Look-up Tables for a number of chemicals that are part of the TRI Certain glycol ether chemical compound category[3] (e.g., Glycol Ether DB, Glycol Ether DE, Glycol Ether DM and Glycol Ether EB). Release estimates of these chemicals must be made individually; however, they must be aggregated for all glycol ethers processed at your facility and submitted on one Form R for Glycol Ethers. As such, the individual Look-up Tables for these glycol ether compounds are marked to indicate the need to aggregate the release estimates.

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[3]This category is limited to glycol ethers derived from ethylene glycol, diethylene glycol, and triethylene glycol. It does NOT include glycol ethers derived from propylene glycol, dipropylene glycol, or tripropylene glycol. For further information, see AToxics Release Inventory: List of Toxic Chemicals Within the Glycol Ethers Category@ (EPA-745-R-95-006).

3.0 How to Use the Look-up Tables

Please read the instructions presented in this section thoroughly prior **to** attempting to use the Look-up Tables presented in Appendix A. The first half of this section presents the basics for using the tables. However, other critical issues are covered latter in this section and must be understood in order to properly utilize the look-up tables. These issues include chemical mixtures, geographical correction factors, and distinguishing stack source releases from fugitive source releases. Examples are provided throughout to demonstrate proper use of the tables.

Figure 1 identifies six sources of air releases from a typical liquid bulk storage and container filling operation at a typical chemical distribution facility.

A1 = Air releases from container filling.

A2 = Air releases from pumps, valves, and other piping components used to deliver liquid to container filling operations from rail cars/tank trucks, storage tanks, or blending tanks.

A3 = Air releases from storage tanks (working and breathing losses).

A4 = Air releases from pumps, valves, and other piping components used to deliver liquid to storage tanks from rail cars/tank trucks.

A5 = Air releases from blending tanks.

A6 = Air releases from pumps, valves, and other piping components used to deliver liquid to blending operations from storage tanks.

The Look-up Tables in Appendix A can be used to calculate air releases from each of these sources based simply on the amount of the chemical passing through the liquid bulk storage and container filling process (i.e., the chemical throughput) and selecting the size of storage tank involved.

Example 1: *If you processed 1 million pounds of toluene through your liquid bulk storage and container filling operation during the reporting year utilizing a 10,000 gallon storage tank, air emissions from sources A1 through A6 could be read directly from the Toluene Look-up Table (reprinted on the following page) under the 1 million pound throughput column.*

A1=93 lb
A2=11 lb
A3=161 lb
A4=3 lb
A5=93 lb
A6=11 lb

Please note that in Example 1, the value for A3 is taken from the row for the 10,000 gallon storage tank because this was the capacity of the tank used in the example. In general for A3, use the row corresponding to the storage tank size that is closest to the tank you use for the chemical in question (i.e., 5000, 10,000, or 25,000 gallons).

General Note #1. EPCRA section 313 requires that facilities report fugitive and stack releases separately. Sources A2, A4, A6, and sometimes A1 pertain to fugitive releases. Sources A3, A5, and sometimes A1 pertain to stack emissions. The last portion of Section 3 provides detailed instructions for separately calculating stack and fugitive releases using the Look-up Tables.

General Note # 2. EPCRA section 313 reporting is in pounds of the particular listed chemical . You may be tracking throughput information in gallons for liquid mixtures. If so, you will need to determine the weight of the EPCRA section 313 chemical in the mixture and then use the poundage of the particular chemical when using the tables.

General Note #3. If all or a portion of the equipment at your facility is exposed to the environment or is not in an atmospherically controlled environment, then you will need to apply a geographic correction factor provided in Appendix B for your release estimates. This subject is discussed in detail later in Section 3.

Toluene Look-up Table
Air Emissions (in pounds) from bulk unloading, storage, blending and container filling operations at a typical chemical distribution facility in Louisville, KY

Type of Air Release (lb)	Throughput (1,000 lb/yr)									
	50	**100**	**250**	**500**	**750**	**1,000**	**2,000**	**3,000**	**5,000**	**10,000**
A1- Container filling emissions	5	9	23	47	70	93	187	280	466	933
A2 - Piping component leaks - delivery of liquid to container filling	1	1	3	6	8	11	22	33	56	112
A3 - Storage tank working + breathing losses (pick closest tank size) 5,000 gallon tank	43	47	61	85	108	131	171	187	218	296
10,000 gallon tank	72	77	91	114	137	161	254	320	351	429
25,000 gallon tank	168	173	187	210	234	257	350	443	630	826
A4 - Piping component leaks - delivery of liquid to storage tank	1	1	1	1	2	3	6	9	14	28
A5 - Blending/mixing tank emissions	5	9	23	47	70	93	187	253	284	362
A6 - Piping component leaks - delivery of liquid to blending/mixing tank	1	2	3	6	9	11	22	33	56	111

Example 2: *Assume you processed 1.4 million pounds of toluene utilizing a 20,000 gallon storage tank. To derive a proper release estimate for A1 - A6, you would have to interpolate the values under the 1 million and 2 million pound columns. Please note that for A3 in this example you would use the 25,000 gallon row.*

A1= 93 +[(1,400,000-1,000,000)/(2,000,000 - 1,000,000)] x [187-93]
= 93 + 0.4 x [187-93]
= 131
A2=11 + 0.4 x [22-11]
= 15
A3=257 + 0.4 x [350-257]
= 294
A4=3 + 0.4 x [6-3]
= 4
A5=93 + 0.4 x [187-93]
= 131
A6=11 + 0.4 x [22-11]
= 15

Examples 1 and 2 assumed that the entire amount of toluene processed during the year went through liquid storage, liquid blending and container filling steps. It is more likely however, that the liquid bulk storage and container filling operation at your facility bypasses one or two of these steps for all or a portion of the annual chemical throughput.

Example 3: *For the facility in Example 2 that processed 1.4 million pounds of toluene during the reporting year, a more likely scenario would be that while all of the 1.4 million pounds passed through the storage tank and container filling steps in Figure 1, only 10% or 140,000 pounds passed through the liquid blending. To address this scenario, you would simply use the 1.4 million throughput value to look-up emission values for A1, A2, A3, and A4, while using the 140,000 pound throughput value to look-up emission values for A5 and A6.*

A1= 131 (from Example 2)
A2=15 (from Example 2)
A3=294 (from Example 2)
A4=4 (from Example 2)
A5=9 +[(140,000-100,000)/(250,000 - 100,000)] x [23-9]
= 9 + 0.27 x [23-9]
= 13
A6=2 + 0.27 x [3-2]
= 2

As discussed in Section 2, the Look-up Tables recognize three process variations associated with liquid bulk storage and container filling:

1. Unloading of the chemical by pumping from a railcar or tanker truck directly into shipping containers such as tank trucks, 55-gallon drums, 5-gallon pails, or 1-gallon cans. In this scenario only A1 and A2 are applicable and A3, A4, A5, and A6 do not apply.

2. Unloading of the chemical by pumping from a railcar or tanker truck to a dedicated fixed-roof, outdoor storage tank and then pumping the chemical from the storage tank into shipping containers such as tank trucks, 55-gallon drums, 5-gallon pails, or 1-gallon cans. In this scenario only A1, A2, A3, and A4 are applicable and A5, and A6 do not apply.

3. Unloading of the chemical by pumping from a railcar or tanker truck to a dedicated fixed-roof, outdoor storage tank and then pumping the chemical to a closed, indoor blending tank on a batch basis, then pumping the chemical from the indoor blending tank into shipping containers such as tank trucks, 55-gallon drums, 5-gallon pails, or 1-gallon cans. In this scenario A1, A2, A3, A4, A5 and A6 are applicable.

When processing liquid bulk chemicals at your facility, you may utilize any and all of these process variations depending on the chemical in question. To utilize the look-up tables, simply think of the liquid bulk storage and container filling operation as consisting of three steps storage (A3 and A4), blending (A5 and A6) and container filling (A1 and A2). Determine the amount of the chemical in question that passes through each step, and then utilize the corresponding throughput values in the Look-up Table to determine the chemical=s air emissions from the individual sources (A1-A6). The following examples demonstrate how to utilize the tables when a combination of steps are used at a facility for a given chemical.

Example 4: *A facility processes 500,000 pounds of toluene during the reporting year. Their process consists of unloading tank trucks directly into totes and drums and then shipping the totes to their customers. No storage tanks are utilized for processing the toluene and no blending is performed.*

A1=47 lb
A2=6 lb
A3=N/A
A4=N/A
A5=N/A
A6=N/A

Example 5: *A facility processes 5 million pounds of toluene during the reporting year. Twenty percent (20%) of the toluene is repackaged into totes, drums and bottles directly from a tank car (Process Variation Number 1 described above). Sixty percent (60%) is repackaged into totes and drums from a 10,000 gallon storage tank (Process Variation Number 2 described above). The remaining twenty percent (20%) is repackaged into drums after storage and blending (Process Variation Number 3 described above).*

Looking at the process in terms of storage, blending and container filling, it is apparent that:

- *100% of the throughput (5 million pounds) in this example passes through the container filling step. Therefore, from the toluene Look-up Table, A1 = 466 lb. And A2 = 56 lb.*

- *80% of the throughput (4 million pounds) passes through the storage tank. Therefore,*
  A3 = 320+[(4 million - 3 million)/(5 million- 3 million)] x [351-320]
  = 320 + 0.5 x (351-320)
  = 336 lb.
  A4 = 9 + 0.5 x (14-9)
  = 12 lb.

- *20% of the throughput (1 million pounds) passes through the blending step. Therefore, from the toluene Look-up Table, A1 = 93 lb. And A2 = 11 lb.*

Mixtures of Chemicals

Each of the Look-up Tables in Appendix A was created assuming the processing of pure chemicals through the liquid bulk storage and container filling process. This is a reasonable assumption given that chemical distributors primarily deal with these chemicals in pure form. There are situations however, where mixtures of chemicals are stored in storage tanks, blended in mixing tanks and repackaged into different containers. The Look-up Tables can be utilized in these situations by imagining the mixtures are Aun-mixed@ and using the throughput of the

chemical of concern only to determine air emissions. In other word, we assume that the mixture is an ideal mixture and the component chemicals of the mixture behave as they do in their pure state. The assumption of an ideal mixture works very well for most organic chemicals, but is not as reliable for more polar chemical compounds.

Geographic Correction Factors

Air emissions of the same chemical in identical processes at different geographical locations across the country will vary significantly due to ambient temperature variations. The Look-up Tables in Appendix A were developed for Louisville, Kentucky. To utilize these tables in different locations, a set of correction factors was developed for 73 cities across the U.S., with at least one from each state. These factors are presented in Appendix B.

The correction factor for Louisville, Kentucky is equal to 1.00. For cities with warmer climates, the factor is >1.00. For cities with colder climates, the factor is <1.00.

The Geographic Correction factors are to be applied only to A1 (air emissions from container filling), A3 (air emissions from storage tanks), and A5 (air emissions from blending tanks). Air emissions from pumps, valves, and other piping components are not a function of ambient temperature and thus the Geographic Correction Factors must not be applied to these emission sources.

To use the Geographic Correction Factors, simply review the list of cities in Appendix B, choose the correction factor for the city nearest your facility, and then multiply the results obtained from the Look-up Tables in Appendix A for A1, A3, and A5 by the selected correction factor.

Example 6: *Suppose the facility addressed in Example 1 was located in Joliet, Illinois. A review of Appendix B would indicated the Chicago, Illinois is the nearest city for which a Geographic Correction Factor is available and that factor is equal to 0.81. Therefore, air emissions of toluene from this facility would be:*

A1=93 lb x 0.81 = 75 lb
A2=11 lb
A3=161 lb x 0.81 = 130 lb
A4=3 lb
A5=93 lb x 0.81 = 75 lb
A6=11 lb

Reporting Point and Non-Point Source Air Emissions Form R

EPA Form R requires separate reporting of aggregate point source air emissions (i.e., stack emissions) and aggregate non-point source emissions (i.e., fugitive emissions). Point source releases are those which occur through stacks, vents, ducts, pipes, or other confined air streams. Non-point source releases are those which do not occur through stacks, vents, ducts, pipes, or other confined air streams. The quantity of the fugitive air emissions should be reported in section 5.1 Column A (Total Release). The quantity of the stack air emissions should be reported in section 5.2 Column A (Total Release). You should enter AO@[4] in both section 5.1 Column B (Basis of Estimate) and section 5.2 Column B (Basis of Estimate).

For the liquid bulk storage and container filling process, the following generalizations can be made regarding point and non-point emissions.

- A1= Air emissions from container filling. These are point source emissions when a local exhaust ventilation system is used to capture emissions from the filling operation. Otherwise, they are typically a non-point source, especially when filling is conducted outside.

- A2= Air emissions from pumps, valves, and other piping components used to deliver liquid to container filling operations from rail cars/tank trucks, storage tanks, or blending tanks. These are always non-point sources.

- A3= Air emissions from storage tanks (working and breathing losses). These are almost always point-sources.

[4] AO@ means that, among other factors, Athe estimate is based on ... approaches such as engineering calculations (e.g., estimating volalization using published mathematical formulas) or best engineering judgement.@ See AToxic Chemical Release Inventory Reporting Forms and Instructions@ page 34.

- A4= Air emissions from pumps, valves, and other piping components used to deliver liquid to storage tanks from rail cars/tank trucks. These are always non-point sources.

- A5= Air emissions from blending tanks. These will be point sources if the blending tank is covered or is local exhaust ventilation is used to capture emissions. If the blend tank is an open-top variety, then A5 will be considered a non-point source.

- A6= Air emissions from pumps, valves, and other piping components used to deliver liquid to blending operations from storage tanks. These are always non-point sources.

After determining A1-A6 using the Look-up Tables and applying the appropriate Geographic Correction Factor, categorize each source as point or non-point and sum for these categories. These estimates need not be rounded to more than two significant figures and should be record in Section 5.1 and 5.2 of Form R. Warning! If you are aware of other sources of air emissions of a subject chemical from your facility in addition to those described herein, you must include these estimates with point and non-point estimates for A1 - A6. For example, if you had a spill of toluene during the year that resulted in fugitive air emissions, you must include the amount released to air from this incident with the non-point source total from A1 - A6.

Example 7: *The facility addressed in Example 6 utilizes a covered blend tank for toluene and performs container filling outdoors.*

A1=75 lb (non-point source)
A2=11 lb (non-point source)
A3=130 lb (point source)
A4=3 lb (non-point source)
A5=75 lb (point source)
A6=11 lb (non-point source)

Total point source emissions= 130 + 75 = 205, Rounding to 2 significant figures yields 200 lb
Total non-point source emissions= 75+11+3+11=100, Rounding to 2 significant figures yields 100 lb.

Form R provides the option of reporting Range Codes in section 5.1 and 5.2. in lieu of numerical values when estimates are below 1000 pounds for the year for either point (stack) or non-point (fugitive) emissions of a given chemical. The range codes are as follows:

- Range Code A: for releases between 1 and 10 pounds per year.
- Range Code B: for releases between 11 and 499 pounds per year.
- Range Code C: for releases between 500 and 999 pounds per year.

Example 8: *For the facility addressed in Example 7, point source emissions equaled 200 pounds and thus could be reported as* AB@ *in Section 5.2 of the toluene Form R. Similarly, non-point source emissions equaled 100 pounds and thus could be reported as* AB@ *in Section 5.1 of the toluene Form R.*

In addition to reporting air emissions in Section 5.1 and 5.2 of Form R, air emissions for the facility must also be included as part of Section 8.1, Total Environmental Releases. The value reported in Section 8.1 must also include any other releases of the chemical to the environment such as releases to water or land or transfers off-site for disposal. Please refer to the AToxic Chemical Release Inventory Reporting Forms and Instructions: Revised 1998 Version@ for details. Please note that you cannot use range codes for completing Section 8.1 although you may for Sections 5.1 and 5.2.

Appendix A Look-up Tables

1,1,1-Trichloroethane Look-up Table
(CAS No. 71-55-6; Methyl chloroform)
Air Emissions (in pounds) from bulk unloading, storage, blending and container filling operations
at a typical chemical distribution facility in Louisville, KY

Type of Air Release (lb)	Throughput (1,000 lb/yr)									
	50	**100**	**250**	**500**	**750**	**1,000**	**2,000**	**3,000**	**5,000**	**10,000**
A1- Container filling emissions	21	42	104	209	313	418	835	1,253	2,088	4,176
A2 - Piping component leaks - delivery of liquid to container filling	1	1	3	6	8	11	22	33	56	112
A3 - Storage tank working + breathing losses (pick closest tank size) 5,000 gallon tank	329	351	418	529	639	750	1,193	1,277	1,424	1,793
10,000 gallon tank	548	571	637	748	859	969	1,412	1,855	2,403	2,772
25,000 gallon tank	1,179	1,201	1,267	1,378	1,489	1,600	2,043	2,486	3,371	5,586
A4 - Piping component leaks - delivery of liquid to storage tank	1	1	1	1	2	3	6	9	14	28
A5 - Blending/mixing tank emissions	22	44	111	221	332	443	886	1,329	1,877	2,246
A6 - Piping component leaks - delivery of liquid to blending/mixing tank	1	2	3	6	9	11	22	33	56	111

1,2,4-Trimethylbenzene Look-up Table

(CAS No. 95-63-6)

Air Emissions (in pounds) from bulk unloading, storage, blending and container filling operations at a typical chemical distribution facility in Louisville, KY

Type of Air Release (lb)	Throughput (1,000 lb/yr)									
	50	**100**	**250**	**500**	**750**	**1,000**	**2,000**	**3,000**	**5,000**	**10,000**
A1- Container filling emissions	1	1	1	3	4	6	11	17	29	57
A2 - Piping component leaks - delivery of liquid to container filling	1	1	3	6	8	11	22	33	56	112
A3 - Storage tank working + breathing losses (pick closest tank size) 5,000 gallon tank	3	4	5	7	8	10	13	15	17	23
10,000 gallon tank	6	6	7	9	11	12	20	25	28	34
25,000 gallon tank	13	14	15	17	19	20	28	35	50	65
A4 - Piping component leaks - delivery of liquid to storage tank	1	1	1	1	2	3	6	9	14	28
A5 - Blending/mixing tank emissions	1	1	2	4	5	7	15	20	22	29
A6 - Piping component leaks - delivery of liquid to blending/mixing tank	1	2	3	6	9	11	22	33	56	111

1,2-Dichlorobenzene Look-up Table

(CAS No. 95-50-1)

Air Emissions (in pounds) from bulk unloading, storage, blending and container filling operations at a typical chemical distribution facility in Louisville, KY

Type of Air Release (lb)	Throughput (1,000 lb/yr)									
	50	**100**	**250**	**500**	**750**	**1,000**	**2,000**	**3,000**	**5,000**	**10,000**
A1- Container filling emissions	1	1	1	2	4	5	9	14	24	47
A2 - Piping component leaks - delivery of liquid to container filling	1	1	3	6	8	11	22	33	56	112
A3 - Storage tank working + breathing losses (pick closest tank size) 5,000 gallon tank	3	3	4	5	6	7	11	12	14	17
10,000 gallon tank	5	5	6	7	8	9	14	18	23	27
25,000 gallon tank	12	12	13	14	15	16	21	25	34	55
A4 - Piping component leaks - delivery of liquid to storage tank	1	1	1	1	2	3	6	9	14	28
A5 - Blending/mixing tank emissions	1	1	1	2	3	4	9	13	18	22
A6 - Piping component leaks - delivery of liquid to blending/mixing tank	1	2	3	6	9	11	22	33	56	111

1,2-Dichloroethane Look-up Table

(CAS No. 107-06-2)

Air Emissions (in pounds) from bulk unloading, storage, blending and container filling operations at a typical chemical distribution facility in Louisville, KY

Type of Air Release (lb)	Throughput (1,000 lb/yr)									
	50	**100**	**250**	**500**	**750**	**1,000**	**2,000**	**3,000**	**5,000**	**10,000**
A1- Container filling emissions	11	21	54	107	161	214	429	643	1,072	2,143
A2 - Piping component leaks - delivery of liquid to container filling	1	1	3	6	8	11	22	33	56	112
A3 - Storage tank working + breathing losses (pick closest tank size) 5,000 gallon tank	135	145	175	226	276	327	509	542	610	779
10,000 gallon tank	227	237	267	318	368	419	622	824	1,023	1,192
25,000 gallon tank	507	517	547	598	649	699	902	1,104	1,509	2,404
A4 - Piping component leaks - delivery of liquid to storage tank	1	1	1	1	2	3	6	9	14	28
A5 - Blending/mixing tank emissions	10	20	51	101	152	203	405	608	807	976
A6 - Piping component leaks - delivery of liquid to blending/mixing tank	1	2	3	6	9	11	22	33	56	111

2-Ethoxyethanol[a] Look-up Table
(CAS No. 110-80-5; Glycol Ether EE)
Air Emissions (in pounds) from bulk unloading, storage, blending and container filling operations
at a typical chemical distribution facility in Louisville, KY

Type of Air Release (lb)	Throughput (1,000 lb/yr)									
	50	**100**	**250**	**500**	**750**	**1,000**	**2,000**	**3,000**	**5,000**	**10,000**
A1- Container filling emissions	1	2	4	8	12	16	33	49	81	163
A2 - Piping component leaks - delivery of liquid to container filling	1	1	3	6	8	11	22	33	56	112
A3 - Storage tank working + breathing losses (pick closest tank size) 5,000 gallon tank	7	8	10	14	18	22	30	32	37	50
10,000 gallon tank	12	13	15	19	23	27	42	55	61	73
25,000 gallon tank	30	31	33	37	41	44	60	75	106	144
A4 - Piping component leaks - delivery of liquid to storage tank	1	1	1	1	2	3	6	9	14	28
A5 - Blending/mixing tank emissions	1	2	4	8	12	15	31	44	49	62
A6 - Piping component leaks - delivery of liquid to blending/mixing tank	1	2	3	6	9	11	22	33	56	111

[a] Report under Glycol Ether chemical category

Aqua ammonia (28%) Look-up Table

(CAS No. 7664-41-7)

Air Emissions (in pounds) from bulk unloading, storage, blending and container filling operations at a typical chemical distribution facility in Louisville, KY

Type of Air Release (lb)	Throughput (1,000 lb/yr)									
	50	**100**	**250**	**500**	**750**	**1,000**	**2,000**	**3,000**	**5,000**	**10,000**
A1- Container filling emissions	17	35	87	174	260	347	694	1,041	1,735	3,471
A2 - Piping component leaks - delivery of liquid to container filling	1	1	3	6	8	11	22	33	56	112
A3 - Storage tank working + breathing losses (pick closest tank size) 5,000 gallon tank	402	423	489	598	707	816	1,019	1,092	1,237	1,600
10,000 gallon tank	645	666	732	841	950	1,059	1,494	1,837	1,982	2,345
25,000 gallon tank	1,235	1,257	1,322	1,431	1,540	1,649	2,085	2,521	3,392	4,391
A4 - Piping component leaks - delivery of liquid to storage tank	1	1	1	1	2	3	6	9	14	28
A5 - Blending/mixing tank emissions	22	44	109	218	327	436	871	1,214	1,359	1,722
A6 - Piping component leaks - delivery of liquid to blending/mixing tank	1	2	3	6	9	11	22	33	56	111

Benzene Look-up Table

(Cas No. 71-43-2)

Air Emissions (in pounds) from bulk unloading, storage, blending and container filling operations at a typical chemical distribution facility in Louisville, KY

Type of Air Release (lb)	Throughput (1,000 lb/yr)									
	50	**100**	**250**	**500**	**750**	**1,000**	**2,000**	**3,000**	**5,000**	**10,000**
A1- Container filling emissions	14	28	70	140	209	279	558	838	1,396	2,792
A2 - Piping component leaks - delivery of liquid to container filling	1	1	3	6	8	11	22	33	56	112
A3 - Storage tank working + breathing losses (pick closest tank size) 5,000 gallon tank	137	151	193	262	332	402	525	571	664	896
10,000 gallon tank	227	241	282	352	422	491	770	975	1,068	1,300
25,000 gallon tank	494	508	550	620	690	759	1,038	1,316	1,874	2,478
A4 - Piping component leaks - delivery of liquid to storage tank	1	1	1	1	2	3	6	9	14	28
A5 - Blending/mixing tank emissions	14	28	70	139	209	279	557	762	855	1,087
A6 - Piping component leaks - delivery of liquid to blending/mixing tank	1	2	3	6	9	11	22	33	56	111

Butyl acrylate Look-up Table

(CAS No. 141-32-2)

Air Emissions (in pounds) from bulk unloading, storage, blending and container filling operations at a typical chemical distribution facility in Louisville, KY

Type of Air Release (lb)	Throughput (1,000 lb/yr)									
	50	**100**	**250**	**500**	**750**	**1,000**	**2,000**	**3,000**	**5,000**	**10,000**
A1- Container filling emissions	1	2	4	9	13	18	36	54	89	179
A2 - Piping component leaks - delivery of liquid to container filling	1	1	3	6	8	11	22	33	56	112
A3 - Storage tank working + breathing losses (pick closest tank size) 5,000 gallon tank	10	11	14	20	25	31	41	45	52	71
10,000 gallon tank	17	18	22	27	33	38	60	78	85	103
25,000 gallon tank	41	43	46	51	57	62	84	106	150	201
A4 - Piping component leaks - delivery of liquid to storage tank	1	1	1	1	2	3	6	9	14	28
A5 - Blending/mixing tank emissions	1	2	6	11	17	22	44	62	69	87
A6 - Piping component leaks - delivery of liquid to blending/mixing tank	1	2	3	6	9	11	22	33	56	111

Carbitol[a] Look-up Table

(CAS No. 111-90-0; Glycol Ether DE; Polysolv DE)

Air Emissions (in pounds) from bulk unloading, storage, blending and container filling operations at a typical chemical distribution facility in Louisville, KY

Type of Air Release (lb)	Throughput (1,000 lb/yr)									
	50	**100**	**250**	**500**	**750**	**1,000**	**2,000**	**3,000**	**5,000**	**10,000**
A1- Container filling emissions	1	1	1	1	1	1	1	2	3	5
A2 - Piping component leaks - delivery of liquid to container filling	1	1	3	6	8	11	22	33	56	112
A3 - Storage tank working + breathing losses (pick closest tank size) 5,000 gallon tank	1	1	1	1	1	1	1	1	1	1
10,000 gallon tank	1	1	1	1	1	1	1	1	2	2
25,000 gallon tank	1	1	1	1	1	1	1	2	3	4
A4 - Piping component leaks - delivery of liquid to storage tank	1	1	1	1	2	3	6	9	14	28
A5 - Blending/mixing tank emissions	1	1	1	1	1	1	1	1	1	2
A6 - Piping component leaks - delivery of liquid to blending/mixing tank	1	2	3	6	9	11	22	33	56	111

[a] Report under Glycol Ether chemical category

Carbon Disulfide Look-up Table

(Cas No. 75-15-0)

Air Emissions (in pounds) from bulk unloading, storage, blending and container filling operations at a typical chemical distribution facility in Louisville, KY

Type of Air Release (lb)	Throughput (1,000 lb/yr)									
	50	**100**	**250**	**500**	**750**	**1,000**	**2,000**	**3,000**	**5,000**	**10,000**
A1- Container filling emissions	38	75	188	376	564	752	1,505	2,257	3,762	7,525
A2 - Piping component leaks - delivery of liquid to container filling	1	1	3	6	8	11	22	33	56	112
A3 - Storage tank working + breathing losses (pick closest tank size) 5,000 gallon tank	642	681	800	997	1,194	1,392	2,119	2,251	2,514	3,172
10,000 gallon tank	1,041	1,080	1,199	1,396	1,593	1,791	2,580	3,370	4,186	4,844
25,000 gallon tank	2,060	2,099	2,218	2,415	2,612	2,810	3,599	4,389	5,968	9,554
A4 - Piping component leaks - delivery of liquid to storage tank	1	1	1	1	2	3	6	9	14	28
A5 - Blending/mixing tank emissions	39	79	197	395	592	789	1,579	2,368	3,185	3,843
A6 - Piping component leaks - delivery of liquid to blending/mixing tank	1	2	3	6	9	11	22	33	56	111

Cumene Look-up Table

(CAS No. 98-82-8; Isopropyl benzene)

Air Emissions (in pounds) from bulk unloading, storage, blending and container filling operations at a typical chemical distribution facility in Louisville, KY

Type of Air Release (lb)	Throughput (1,000 lb/yr)									
	50	**100**	**250**	**500**	**750**	**1,000**	**2,000**	**3,000**	**5,000**	**10,000**
A1- Container filling emissions	2	5	12	23	35	47	94	141	235	469
A2 - Piping component leaks - delivery of liquid to container filling	1	1	3	6	8	11	22	33	56	112
A3 - Storage tank working + breathing losses (pick closest tank size) 5,000 gallon tank	8	9	12	17	21	26	34	37	43	59
10,000 gallon tank	14	15	18	22	27	32	51	64	70	85
25,000 gallon tank	34	35	38	42	47	52	70	89	127	165
A4 - Piping component leaks - delivery of liquid to storage tank	1	1	1	1	2	3	6	9	14	28
A5 - Blending/mixing tank emissions	1	2	5	9	14	19	38	50	57	72
A6 - Piping component leaks - delivery of liquid to blending/mixing tank	1	2	3	6	9	11	22	33	56	111

Cyclohexanol Look-up Table

(CAS No. 108-93-0)

Air Emissions (in pounds) from bulk unloading, storage, blending and container filling operations at a typical chemical distribution facility in Louisville, KY

Type of Air Release (lb)	Throughput (1,000 lb/yr)									
	50	**100**	**250**	**500**	**750**	**1,000**	**2,000**	**3,000**	**5,000**	**10,000**
A1- Container filling emissions	1	1	1	2	3	4	9	13	22	44
A2 - Piping component leaks - delivery of liquid to container filling	1	1	3	6	8	11	22	33	56	112
A3 - Storage tank working + breathing losses (pick closest tank size) 5,000 gallon tank	1	1	1	1	1	1	1	1	1	1
10,000 gallon tank	1	1	1	1	1	1	1	2	2	2
25,000 gallon tank	1	1	1	1	1	1	2	2	3	4
A4 - Piping component leaks - delivery of liquid to storage tank	1	1	1	1	2	3	6	9	14	28
A5 - Blending/mixing tank emissions	1	1	1	1	1	1	1	1	1	2
A6 - Piping component leaks - delivery of liquid to blending/mixing tank	1	2	3	6	9	11	22	33	56	111

Cyclohexane Look-up Table

(CAS No. 110-82-7)

Air Emissions (in pounds) from bulk unloading, storage, blending and container filling operations at a typical chemical distribution facility in Louisville, KY

Type of Air Release (lb)	Throughput (1,000 lb/yr)									
	50	**100**	**250**	**500**	**750**	**1,000**	**2,000**	**3,000**	**5,000**	**10,000**
A1- Container filling emissions	18	35	88	177	265	353	706	1,060	1,766	3,532
A2 - Piping component leaks - delivery of liquid to container filling	1	1	3	6	8	11	22	33	56	112
A3 - Storage tank working + breathing losses (pick closest tank size) 5,000 gallon tank	155	172	225	313	401	489	600	659	776	1,069
10,000 gallon tank	254	272	325	413	501	589	940	1,110	1,227	1,520
25,000 gallon tank	551	568	621	709	797	885	1,237	1,589	2,292	2,835
A4 - Piping component leaks - delivery of liquid to storage tank	1	1	1	1	2	3	6	9	14	28
A5 - Blending/mixing tank emissions	18	35	88	176	264	352	704	873	990	1,284
A6 - Piping component leaks - delivery of liquid to blending/mixing tank	1	2	3	6	9	11	22	33	56	111

Bis(2-ethylhexyl) phthalate Look-up Table
(CAS No. 117-81-7; DEHP)
Air Emissions (in pounds) from bulk unloading, storage, blending and container filling operations
at a typical chemical distribution facility in Louisville, KY

Type of Air Release (lb)	Throughput (1,000 lb/yr)									
	50	**100**	**250**	**500**	**750**	**1,000**	**2,000**	**3,000**	**5,000**	**10,000**
A1- Container filling emissions	0	0	0	0	0	0	0	1	1	1
A2 - Piping component leaks - delivery of liquid to container filling	1	1	3	6	8	11	22	33	56	112
A3 - Storage tank working + breathing losses (pick closest tank size) 5,000 gallon tank	1	1	1	1	1	1	1	1	1	1
10,000 gallon tank	1	1	1	1	1	1	1	1	1	1
25,000 gallon tank	1	1	1	1	1	1	1	1	1	1
A4 - Piping component leaks - delivery of liquid to storage tank	1	1	1	1	2	3	6	9	14	28
A5 - Blending/mixing tank emissions	0	0	1	1	1	1	1	1	1	1
A6 - Piping component leaks - delivery of liquid to blending/mixing tank	1	2	3	6	9	11	22	33	56	111

Dichlorobenzene (mixed isomers) Look-up Table

(CAS No. 25321-22-6)

Air Emissions (in pounds) from bulk unloading, storage, blending and container filling operations at a typical chemical distribution facility in Louisville, KY

Type of Air Release (lb)	Throughput (1,000 lb/yr)									
	50	**100**	**250**	**500**	**750**	**1,000**	**2,000**	**3,000**	**5,000**	**10,000**
A1- Container filling emissions	1	1	2	3	5	6	13	19	32	64
A2 - Piping component leaks - delivery of liquid to container filling	1	1	3	6	8	11	22	33	56	112
A3 - Storage tank working + breathing losses (pick closest tank size) 5,000 gallon tank	4	4	5	7	8	10	15	16	19	24
10,000 gallon tank	7	7	8	9	11	13	19	25	31	37
25,000 gallon tank	16	16	17	19	21	22	28	35	47	75
A4 - Piping component leaks - delivery of liquid to storage tank	1	1	1	1	2	3	6	9	14	28
A5 - Blending/mixing tank emissions	1	1	2	3	5	6	13	19	25	30
A6 - Piping component leaks - delivery of liquid to blending/mixing tank	1	2	3	6	9	11	22	33	56	111

Dichloromethane Look-up Table
(CAS No. 75-09-2; Methylene chloride)
Air Emissions (in pounds) from bulk unloading, storage, blending and container filling operations
at a typical chemical distribution facility in Louisville, KY

Type of Air Release (lb)	Throughput (1,000 lb/yr)									
	50	**100**	**250**	**500**	**750**	**1,000**	**2,000**	**3,000**	**5,000**	**10,000**
A1- Container filling emissions	47	94	234	469	703	937	1,874	2,812	4,686	9,372
A2 - Piping component leaks - delivery of liquid to container filling	1	1	3	6	8	11	22	33	56	112
A3 - Storage tank working + breathing losses (pick closest tank size) 5,000 gallon tank	925	973	1,120	1,364	1,608	1,852	2,828	3,000	3,325	4,139
10,000 gallon tank	1,499	1,548	1,694	1,938	2,182	2,426	3,402	4,378	5,562	6,375
25,000 gallon tank	2,944	2,993	3,139	3,383	3,627	3,871	4,847	5,824	7,776	12,636
A4 - Piping component leaks - delivery of liquid to storage tank	1	1	1	1	2	3	6	9	14	28
A5 - Blending/mixing tank emissions	49	98	244	488	732	976	1,952	2,928	4,111	4,925
A6 - Piping component leaks - delivery of liquid to blending/mixing tank	1	2	3	6	9	11	22	33	56	111

Dimethyl phthalate Look-up Table

(CAS No. 131-11-3)

Air Emissions (in pounds) from bulk unloading, storage, blending and container filling operations at a typical chemical distribution facility in Louisville, KY

Type of Air Release (lb)	Throughput (1,000 lb/yr)									
	50	**100**	**250**	**500**	**750**	**1,000**	**2,000**	**3,000**	**5,000**	**10,000**
A1- Container filling emissions	0	1	1	1	1	1	1	1	1	1
A2 - Piping component leaks - delivery of liquid to container filling	1	1	3	6	8	11	22	33	56	112
A3 - Storage tank working + breathing losses (pick closest tank size) 5,000 gallon tank	0	0	0	0	0	0	0	0	0	0
10,000 gallon tank	0	0	0	0	0	0	0	0	0	0
25,000 gallon tank	0	0	0	0	0	0	0	0	0	0
A4 - Piping component leaks - delivery of liquid to storage tank	1	1	1	1	2	3	6	9	14	28
A5 - Blending/mixing tank emissions	0	0	0	0	0	0	0	0	0	0
A6 - Piping component leaks - delivery of liquid to blending/mixing tank	1	2	3	6	9	11	22	33	56	111

Dimethylformamide Look-up Table
(CAS No. 68-12-2; N,N-Dimethylformamide)
Air Emissions (in pounds) from bulk unloading, storage, blending and container filling operations
at a typical chemical distribution facility in Louisville, KY

Type of Air Release (lb)	Throughput (1,000 lb/yr)									
	50	**100**	**250**	**500**	**750**	**1,000**	**2,000**	**3,000**	**5,000**	**10,000**
A1- Container filling emissions	1	1	2	5	7	10	19	29	48	97
A2 - Piping component leaks - delivery of liquid to container filling	1	1	3	6	8	11	22	33	56	112
A3 - Storage tank working + breathing losses (pick closest tank size) 5,000 gallon tank	4	4	6	8	10	12	16	17	20	27
10,000 gallon tank	7	7	8	10	12	14	22	30	33	39
25,000 gallon tank	16	17	18	20	22	24	32	40	56	76
A4 - Piping component leaks - delivery of liquid to storage tank	1	1	1	1	2	3	6	9	14	28
A5 - Blending/mixing tank emissions	1	1	2	4	6	8	16	24	26	33
A6 - Piping component leaks - delivery of liquid to blending/mixing tank	1	2	3	6	9	11	22	33	56	111

Ethylene glycol Look-up Table
(CAS No. 107-21-1)
Air Emissions (in pounds) from bulk unloading, storage, blending and container filling operations
at a typical chemical distribution facility in Louisville, KY

Type of Air Release (lb)	Throughput (1,000 lb/yr)									
	50	**100**	**250**	**500**	**750**	**1,000**	**2,000**	**3,000**	**5,000**	**10,000**
A1- Container filling emissions	1	1	1	1	1	1	1	1	1	1
A2 - Piping component leaks - delivery of liquid to container filling	1	1	3	6	8	11	22	33	56	112
A3 - Storage tank working + breathing losses (pick closest tank size) 5,000 gallon tank	1	1	1	1	1	1	1	1	1	1
10,000 gallon tank	1	1	1	1	1	1	1	1	1	1
25,000 gallon tank	1	1	1	1	1	1	1	1	1	2
A4 - Piping component leaks - delivery of liquid to storage tank	1	1	1	1	2	3	6	9	14	28
A5 - Blending/mixing tank emissions	1	1	1	1	1	1	1	1	1	1
A6 - Piping component leaks - delivery of liquid to blending/mixing tank	1	2	3	6	9	11	22	33	56	111

Ethylbenzene Look-up Table

(CAS No. 100-41-4)

Air Emissions (in pounds) from bulk unloading, storage, blending and container filling operations at a typical chemical distribution facility in Louisville, KY

Type of Air Release (lb)	Throughput (1,000 lb/yr)									
	50	**100**	**250**	**500**	**750**	**1,000**	**2,000**	**3,000**	**5,000**	**10,000**
A1- Container filling emissions	2	4	9	18	27	36	72	108	179	358
A2 - Piping component leaks - delivery of liquid to container filling	1	1	3	6	8	11	22	33	56	112
A3 - Storage tank working + breathing losses (pick closest tank size) 5,000 gallon tank	16	17	23	31	40	49	64	70	82	111
10,000 gallon tank	27	28	34	42	51	60	95	120	132	161
25,000 gallon tank	64	66	71	80	88	97	132	167	237	311
A4 - Piping component leaks - delivery of liquid to storage tank	1	1	1	1	2	3	6	9	14	28
A5 - Blending/mixing tank emissions	2	4	9	18	26	35	70	95	107	136
A6 - Piping component leaks - delivery of liquid to blending/mixing tank	1	2	3	6	9	11	22	33	56	111

Ethyl acrylate Look-up Table
(CAS No. 140-88-5)
Air Emissions (in pounds) from bulk unloading, storage, blending and container filling operations
at a typical chemical distribution facility in Louisville, KY

Type of Air Release (lb)	Throughput (1,000 lb/yr)									
	50	**100**	**250**	**500**	**750**	**1,000**	**2,000**	**3,000**	**5,000**	**10,000**
A1- Container filling emissions	7	13	33	66	99	132	265	397	662	1,324
A2 - Piping component leaks - delivery of liquid to container filling	1	1	3	6	8	11	22	33	56	112
A3 - Storage tank working + breathing losses (pick closest tank size) 5,000 gallon tank	68	75	96	131	166	201	269	293	339	456
10,000 gallon tank	114	121	142	177	212	247	386	503	550	666
25,000 gallon tank	263	270	291	326	361	395	535	675	954	1,292
A4 - Piping component leaks - delivery of liquid to storage tank	1	1	1	1	2	3	6	9	14	28
A5 - Blending/mixing tank emissions	7	14	35	70	105	140	279	396	443	559
A6 - Piping component leaks - delivery of liquid to blending/mixing tank	1	2	3	6	9	11	22	33	56	111

Formic acid Look-up Table

(CAS No. 64-18-6)

Air Emissions (in pounds) from bulk unloading, storage, blending and container filling operations at a typical chemical distribution facility in Louisville, KY

Type of Air Release (lb)	Throughput (1,000 lb/yr)									
	50	**100**	**250**	**500**	**750**	**1,000**	**2,000**	**3,000**	**5,000**	**10,000**
A1- Container filling emissions	3	6	14	28	42	55	111	166	277	554
A2 - Piping component leaks - delivery of liquid to container filling	1	1	3	6	8	11	22	33	56	112
A3 - Storage tank working + breathing losses (pick closest tank size) 5,000 gallon tank	33	36	44	57	70	83	129	138	155	199
10,000 gallon tank	56	59	67	80	93	106	159	212	261	305
25,000 gallon tank	130	133	140	154	167	180	233	285	391	617
A4 - Piping component leaks - delivery of liquid to storage tank	1	1	1	1	2	3	6	9	14	28
A5 - Blending/mixing tank emissions	3	5	13	26	40	53	105	158	207	251
A6 - Piping component leaks - delivery of liquid to blending/mixing tank	1	2	3	6	9	11	22	33	56	111

Butyl Carbitol[a] Look-up Table

(CAS No. 112-34-5; Glycol Ether DB)

Air Emissions (in pounds) from bulk unloading, storage, blending and container filling operations at a typical chemical distribution facility in Louisville, KY

Type of Air Release (lb)	Throughput (1,000 lb/yr)									
	50	**100**	**250**	**500**	**750**	**1,000**	**2,000**	**3,000**	**5,000**	**10,000**
A1- Container filling emissions	1	1	1	1	1	1	1	1	1	1
A2 - Piping component leaks - delivery of liquid to container filling	1	1	3	6	8	11	22	33	56	112
A3 - Storage tank working + breathing losses (pick closest tank size) 5,000 gallon tank	1	1	1	1	1	1	1	1	1	1
10,000 gallon tank	1	1	1	1	1	1	1	1	1	1
25,000 gallon tank	1	1	1	1	1	1	1	1	1	1
A4 - Piping component leaks - delivery of liquid to storage tank	1	1	1	1	2	3	6	9	14	28
A5 - Blending/mixing tank emissions	0	1	1	1	1	1	1	1	1	1
A6 - Piping component leaks - delivery of liquid to blending/mixing tank	1	2	3	6	9	11	22	33	56	111

[a] Report under Glycol Ether chemical category

Glycol Ether DB Acetate[a] Look-up Table

(CAS No. 124-17-4)

Air Emissions (in pounds) from bulk unloading, storage, blending and container filling operations at a typical chemical distribution facility in Louisville, KY

Type of Air Release (lb)	Throughput (1,000 lb/yr)									
	50	**100**	**250**	**500**	**750**	**1,000**	**2,000**	**3,000**	**5,000**	**10,000**
A1- Container filling emissions	0	1	1	1	1	1	1	1	1	1
A2 - Piping component leaks - delivery of liquid to container filling	1	1	3	6	8	11	22	33	56	112
A3 - Storage tank working + breathing losses (pick closest tank size) 5,000 gallon tank	1	1	1	1	1	1	1	1	1	1
10,000 gallon tank	1	1	1	1	1	1	1	1	1	1
25,000 gallon tank	1	1	1	1	1	1	1	1	1	1
A4 - Piping component leaks - delivery of liquid to storage tank	1	1	1	1	2	3	6	9	14	28
A5 - Blending/mixing tank emissions	0	1	1	1	1	1	1	1	1	1
A6 - Piping component leaks - delivery of liquid to blending/mixing tank	1	2	3	6	9	11	22	33	56	111

[a] Report under Glycol Ether chemical category

Glycol Ether DE Acetate[a] Look-up Table

(CAS No. 112-15-2)

Air Emissions (in pounds) from bulk unloading, storage, blending and container filling operations at a typical chemical distribution facility in Louisville, KY

Type of Air Release (lb)	Throughput (1,000 lb/yr)									
	50	**100**	**250**	**500**	**750**	**1,000**	**2,000**	**3,000**	**5,000**	**10,000**
A1- Container filling emissions	1	1	1	1	1	1	1	1	2	4
A2 - Piping component leaks - delivery of liquid to container filling	1	1	3	6	8	11	22	33	56	112
A3 - Storage tank working + breathing losses (pick closest tank size) 5,000 gallon tank	1	1	1	1	1	1	1	1	1	1
10,000 gallon tank	1	1	1	1	1	1	1	1	1	1
25,000 gallon tank	1	1	1	1	1	1	1	1	1	1
A4 - Piping component leaks - delivery of liquid to storage tank	1	1	1	1	2	3	6	9	14	28
A5 - Blending/mixing tank emissions	1	1	1	1	1	1	1	1	1	1
A6 - Piping component leaks - delivery of liquid to blending/mixing tank	1	2	3	6	9	11	22	33	56	111

[a] Report under Glycol Ether chemical category

Methyl Carbitol[a] Look-up Table

(CAS No. 111-77-3; Glycol Ether DM)

Air Emissions (in pounds) from bulk unloading, storage, blending and container filling operations at a typical chemical distribution facility in Louisville, KY

Type of Air Release (lb)	Throughput (1,000 lb/yr)									
	50	**100**	**250**	**500**	**750**	**1,000**	**2,000**	**3,000**	**5,000**	**10,000**
A1- Container filling emissions	1	1	1	1	1	1	2	3	5	10
A2 - Piping component leaks - delivery of liquid to container filling	1	1	3	6	8	11	22	33	56	112
A3 - Storage tank working + breathing losses (pick closest tank size) 5,000 gallon tank	1	1	1	1	1	1	1	1	1	2
10,000 gallon tank	1	1	1	1	1	1	2	2	2	3
25,000 gallon tank	1	1	1	1	2	2	2	3	4	6
A4 - Piping component leaks - delivery of liquid to storage tank	1	1	1	1	2	3	6	9	14	28
A5 - Blending/mixing tank emissions	1	1	1	1	1	1	1	2	2	2
A6 - Piping component leaks - delivery of liquid to blending/mixing tank	1	2	3	6	9	11	22	33	56	111

[a] Report under Glycol Ether chemical category

Butyl Cellosolve[a] Look-up Table
(CAS No. 111-76-2; Glycol Ether EB)
Air Emissions (in pounds) from bulk unloading, storage, blending and container filling operations
at a typical chemical distribution facility in Louisville, KY

Type of Air Release (lb)	Throughput (1,000 lb/yr)									
	50	**100**	**250**	**500**	**750**	**1,000**	**2,000**	**3,000**	**5,000**	**10,000**
A1- Container filling emissions	1	1	4	7	11	15	30	44	74	148
A2 - Piping component leaks - delivery of liquid to container filling	1	1	3	6	8	11	22	33	56	112
A3 - Storage tank working + breathing losses (pick closest tank size) 5,000 gallon tank	1	1	1	2	2	3	4	4	5	7
10,000 gallon tank	2	2	2	3	3	4	6	7	8	10
25,000 gallon tank	4	4	4	5	5	6	8	10	14	19
A4 - Piping component leaks - delivery of liquid to storage tank	1	1	1	1	2	3	6	9	14	28
A5 - Blending/mixing tank emissions	1	1	1	1	2	2	4	6	6	8
A6 - Piping component leaks - delivery of liquid to blending/mixing tank	1	2	3	6	9	11	22	33	56	111

[a] Report under Glycol Ether chemical category

Glycol Ether EB Acetate[a] Look-up Table

(CAS No. 112-07-2)

Air Emissions (in pounds) from bulk unloading, storage, blending and container filling operations at a typical chemical distribution facility in Louisville, KY

Type of Air Release (lb)	Throughput (1,000 lb/yr)									
	50	**100**	**250**	**500**	**750**	**1,000**	**2,000**	**3,000**	**5,000**	**10,000**
A1- Container filling emissions	1	1	1	1	1	2	4	5	9	17
A2 - Piping component leaks - delivery of liquid to container filling	1	1	3	6	8	11	22	33	56	112
A3 - Storage tank working + breathing losses (pick closest tank size) 5,000 gallon tank	1	1	1	2	2	2	3	4	4	6
10,000 gallon tank	1	1	2	2	3	3	5	6	7	8
25,000 gallon tank	3	3	4	4	5	5	7	8	12	16
A4 - Piping component leaks - delivery of liquid to storage tank	1	1	1	1	2	3	6	9	14	28
A5 - Blending/mixing tank emissions	1	1	1	1	1	2	3	5	6	7
A6 - Piping component leaks - delivery of liquid to blending/mixing tank	1	2	3	6	9	11	22	33	56	111

[a] Report under Glycol Ether chemical category

Glycol Ether EE Acetate[a] Look-up Table

(CAS No. 111-15-9)

Air Emissions (in pounds) from bulk unloading, storage, blending and container filling operations at a typical chemical distribution facility in Louisville, KY

Type of Air Release (lb)	Throughput (1,000 lb/yr)									
	50	**100**	**250**	**500**	**750**	**1,000**	**2,000**	**3,000**	**5,000**	**10,000**
A1- Container filling emissions	1	1	2	3	5	7	14	20	34	68
A2 - Piping component leaks - delivery of liquid to container filling	1	1	3	6	8	11	22	33	56	112
A3 - Storage tank working + breathing losses (pick closest tank size) 5,000 gallon tank	4	4	5	7	9	10	14	16	18	24
10,000 gallon tank	6	6	7	9	11	13	20	27	30	36
25,000 gallon tank	15	15	16	18	20	22	29	36	51	71
A4 - Piping component leaks - delivery of liquid to storage tank	1	1	1	1	2	3	6	9	14	28
A5 - Blending/mixing tank emissions	1	1	2	4	5	7	15	22	24	30
A6 - Piping component leaks - delivery of liquid to blending/mixing tank	1	2	3	6	9	11	22	33	56	111

[a] Report under Glycol Ether chemical category

2-Methoxyethanol[a] Look-up Table

(CAS No. 109-86-4; Glycol Ether EM)

Air Emissions (in pounds) from bulk unloading, storage, blending and container filling operations at a typical chemical distribution facility in Louisville, KY

Type of Air Release (lb)	Throughput (1,000 lb/yr)									
	50	**100**	**250**	**500**	**750**	**1,000**	**2,000**	**3,000**	**5,000**	**10,000**
A1- Container filling emissions	1	2	5	10	15	20	41	61	102	205
A2 - Piping component leaks - delivery of liquid to container filling	1	1	3	6	8	11	22	33	56	112
A3 - Storage tank working + breathing losses (pick closest tank size) 5,000 gallon tank	9	10	13	17	22	27	37	40	46	62
10,000 gallon tank	15	16	19	24	28	33	52	69	76	91
25,000 gallon tank	37	38	41	46	50	55	74	92	129	180
A4 - Piping component leaks - delivery of liquid to storage tank	1	1	1	1	2	3	6	9	14	28
A5 - Blending/mixing tank emissions	1	2	5	9	14	19	37	55	61	77
A6 - Piping component leaks - delivery of liquid to blending/mixing tank	1	2	3	6	9	11	22	33	56	111

[a] Report under Glycol Ether chemical category

Polysolv TE[a] Look-up Table

(CAS No. 112-50-5; Glycol Ether TE)

Air Emissions (in pounds) from bulk unloading, storage, blending and container filling operations at a typical chemical distribution facility in Louisville, KY

Type of Air Release (lb)	Throughput (1,000 lb/yr)									
	50	**100**	**250**	**500**	**750**	**1,000**	**2,000**	**3,000**	**5,000**	**10,000**
A1- Container filling emissions	0	1	1	1	1	1	1	1	1	1
A2 - Piping component leaks - delivery of liquid to container filling	1	1	3	6	8	11	22	33	56	112
A3 - Storage tank working + breathing losses (pick closest tank size) 5,000 gallon tank	1	1	1	1	1	1	1	1	1	1
10,000 gallon tank	1	1	1	1	1	1	1	1	1	1
25,000 gallon tank	1	1	1	1	1	1	1	1	1	1
A4 - Piping component leaks - delivery of liquid to storage tank	1	1	1	1	2	3	6	9	14	28
A5 - Blending/mixing tank emissions	0	1	1	1	1	1	1	1	1	1
A6 - Piping component leaks - delivery of liquid to blending/mixing tank	1	2	3	6	9	11	22	33	56	111

[a] Report under Glycol Ether chemical category

Sulfuric acid (98%) Look-up Table
(CAS No. 7664-93-9)
Air Emissions (in pounds) from bulk unloading, storage, blending and container filling operations
at a typical chemical distribution facility in Louisville, KY

Type of Air Release (lb)	Throughput (1,000 lb/yr)									
	50	**100**	**250**	**500**	**750**	**1,000**	**2,000**	**3,000**	**5,000**	**10,000**
A1- Container filling emissions	0	0	0	0	0	0	0	0	0	0
A2 - Piping component leaks - delivery of liquid to container filling	1	1	3	6	8	11	22	33	56	112
A3 - Storage tank working + breathing losses (pick closest tank size) 5,000 gallon tank	0	0	0	0	0	0	0	0	0	0
10,000 gallon tank	0	0	0	0	0	0	0	0	0	0
25,000 gallon tank	0	0	0	0	0	0	0	0	0	0
A4 - Piping component leaks - delivery of liquid to storage tank	1	1	1	1	2	3	6	9	14	28
A5 - Blending/mixing tank emissions	0	0	0	0	0	0	0	0	0	0
A6 - Piping component leaks - delivery of liquid to blending/mixing tank	1	2	3	6	9	11	22	33	56	111

Hydrochloric acid (32%) Look-up Table
(CAS No. 7647-01-0)
Air Emissions (in pounds) from bulk unloading, storage, blending and container filling operations
at a typical chemical distribution facility in Louisville, KY

Type of Air Release (lb)	Throughput (1,000 lb/yr)									
	50	**100**	**250**	**500**	**750**	**1,000**	**2,000**	**3,000**	**5,000**	**10,000**
A1- Container filling emissions	1	2	6	11	17	22	44	67	111	222
A2 - Piping component leaks - delivery of liquid to container filling	1	1	3	6	8	11	22	33	56	112
A3 - Storage tank working + breathing losses (pick closest tank size) 5,000 gallon tank	16	18	22	29	36	42	64	69	78	101
10,000 gallon tank	28	29	34	40	47	54	81	109	130	153
25,000 gallon tank	66	68	72	79	85	92	120	147	201	308
A4 - Piping component leaks - delivery of liquid to storage tank	1	1	1	1	2	3	6	9	14	28
A5 - Blending/mixing tank emissions	1	3	7	14	20	27	55	82	103	126
A6 - Piping component leaks - delivery of liquid to blending/mixing tank	1	2	3	6	9	11	22	33	56	111

n-Hexane Look-up Table

(CAS No. 110-54-3)

Air Emissions (in pounds) from bulk unloading, storage, blending and container filling operations at a typical chemical distribution facility in Louisville, KY

Type of Air Release (lb)	Throughput (1,000 lb/yr)									
	50	**100**	**250**	**500**	**750**	**1,000**	**2,000**	**3,000**	**5,000**	**10,000**
A1- Container filling emissions	34	68	170	340	510	679	1,359	2,038	3,397	6,794
A2 - Piping component leaks - delivery of liquid to container filling	1	1	3	6	8	11	22	33	56	112
A3 - Storage tank working + breathing losses (pick closest tank size) 5,000 gallon tank	265	299	400	569	737	905	1,017	1,129	1,354	1,916
10,000 gallon tank	429	463	564	732	901	1,069	1,743	1,862	2,087	2,649
25,000 gallon tank	892	926	1,027	1,195	1,364	1,532	2,206	2,880	4,200	4,762
A4 - Piping component leaks - delivery of liquid to storage tank	1	1	1	1	2	3	6	9	14	28
A5 - Blending/mixing tank emissions	34	67	169	337	506	674	1,348	1,467	1,692	2,253
A6 - Piping component leaks - delivery of liquid to blending/mixing tank	1	2	3	6	9	11	22	33	56	111

Hexyl Carbitol[a] Look-up Table

(CAS No. 112-59-4)

Air Emissions (in pounds) from bulk unloading, storage, blending and container filling operations at a typical chemical distribution facility in Louisville, KY

Type of Air Release (lb)	Throughput (1,000 lb/yr)									
	50	**100**	**250**	**500**	**750**	**1,000**	**2,000**	**3,000**	**5,000**	**10,000**
A1- Container filling emissions	0	0	1	1	1	1	1	1	1	1
A2 - Piping component leaks - delivery of liquid to container filling	1	1	3	6	8	11	22	33	56	112
A3 - Storage tank working + breathing losses (pick closest tank size) 5,000 gallon tank	1	1	1	1	1	1	1	1	1	1
10,000 gallon tank	1	1	1	1	1	1	1	1	1	1
25,000 gallon tank	1	1	1	1	1	1	1	1	1	1
A4 - Piping component leaks - delivery of liquid to storage tank	1	1	1	1	2	3	6	9	14	28
A5 - Blending/mixing tank emissions	0	0	1	1	1	1	1	1	1	1
A6 - Piping component leaks - delivery of liquid to blending/mixing tank	1	2	3	6	9	11	22	33	56	111

[a] Report under Glycol Ether chemical category

Hexyl Cellosolve[a] Look-up Table

(CAS No. 112-25-4)

Air Emissions (in pounds) from bulk unloading, storage, blending and container filling operations at a typical chemical distribution facility in Louisville, KY

Type of Air Release (lb)	Throughput (1,000 lb/yr)									
	50	**100**	**250**	**500**	**750**	**1,000**	**2,000**	**3,000**	**5,000**	**10,000**
A1- Container filling emissions	1	1	1	1	1	1	2	3	5	10
A2 - Piping component leaks - delivery of liquid to container filling	1	1	3	6	8	11	22	33	56	112
A3 - Storage tank working + breathing losses (pick closest tank size) 5,000 gallon tank	1	1	1	1	1	1	1	1	1	2
10,000 gallon tank	1	1	1	1	1	1	2	2	2	3
25,000 gallon tank	1	1	1	1	2	2	2	3	4	6
A4 - Piping component leaks - delivery of liquid to storage tank	1	1	1	1	2	3	6	9	14	28
A5 - Blending/mixing tank emissions	1	1	1	1	1	1	1	2	2	2
A6 - Piping component leaks - delivery of liquid to blending/mixing tank	1	2	3	6	9	11	22	33	56	111

[a] Report under Glycol Ether chemical category

Methyl ethyl keytone Look-up Table
(CAS No. 78-93-3; MEK)
Air Emissions (in pounds) from bulk unloading, storage, blending and container filling operations
at a typical chemical distribution facility in Louisville, KY

Type of Air Release (lb)	Throughput (1,000 lb/yr)									
	50	**100**	**250**	**500**	**750**	**1,000**	**2,000**	**3,000**	**5,000**	**10,000**
A1- Container filling emissions	15	29	73	147	220	293	586	879	1,465	2,931
A2 - Piping component leaks - delivery of liquid to container filling	1	1	3	6	8	11	22	33	56	112
A3 - Storage tank working + breathing losses (pick closest tank size) 5,000 gallon tank	119	132	172	237	302	368	459	502	589	807
10,000 gallon tank	197	210	249	315	380	445	707	849	936	1,154
25,000 gallon tank	431	444	483	549	614	679	941	1,202	1,725	2,169
A4 - Piping component leaks - delivery of liquid to storage tank	1	1	1	1	2	3	6	9	14	28
A5 - Blending/mixing tank emissions	13	26	65	131	196	261	523	665	752	970
A6 - Piping component leaks - delivery of liquid to blending/mixing tank	1	2	3	6	9	11	22	33	56	111

Methanol Look-up Table

(Cas No. 67-56-1)

Air Emissions (in pounds) from bulk unloading, storage, blending and container filling operations at a typical chemical distribution facility in Louisville, KY

Type of Air Release (lb)	Throughput (1,000 lb/yr)									
	50	**100**	**250**	**500**	**750**	**1,000**	**2,000**	**3,000**	**5,000**	**10,000**
A1- Container filling emissions	8	16	41	81	122	163	325	488	814	1627
A2 - Piping component leaks - delivery of liquid to container filling	1	1	3	6	8	11	22	33	56	112
A3 - Storage tank working + breathing losses (pick closest tank size) 5,000 gallon tank	75	83	106	145	184	223	274	300	352	482
10,000 gallon tank	123	131	154	193	232	271	427	506	558	688
25,000 gallon tank	264	272	295	334	373	412	568	724	1036	1286
A4 - Piping component leaks - delivery of liquid to storage tank	1	1	1	1	2	3	6	9	14	28
A5 - Blending/mixing tank emissions	8	16	39	78	117	156	312	391	443	573
A6 - Piping component leaks - delivery of liquid to blending/mixing tank	1	2	3	6	9	11	22	33	56	111

Methyl methacrylate Look-up Table

(CAS No. 80-62-6)

Air Emissions (in pounds) from bulk unloading, storage, blending and container filling operations at a typical chemical distribution facility in Louisville, KY

Type of Air Release (lb)	Throughput (1,000 lb/yr)									
	50	**100**	**250**	**500**	**750**	**1,000**	**2,000**	**3,000**	**5,000**	**10,000**
A1- Container filling emissions	6	13	32	65	97	130	259	389	648	1,295
A2 - Piping component leaks - delivery of liquid to container filling	1	1	3	6	8	11	22	33	56	112
A3 - Storage tank working + breathing losses (pick closest tank size) 5,000 gallon tank	59	65	83	113	143	173	235	255	294	394
10,000 gallon tank	100	106	124	154	184	214	333	439	479	578
25,000 gallon tank	232	238	256	286	316	346	465	585	824	1,127
A4 - Piping component leaks - delivery of liquid to storage tank	1	1	1	1	2	3	6	9	14	28
A5 - Blending/mixing tank emissions	6	12	30	60	90	119	239	345	385	484
A6 - Piping component leaks - delivery of liquid to blending/mixing tank	1	2	3	6	9	11	22	33	56	111

Methyl isobutyl keytone Look-up Table
(CAS No. 108-10-1; MIBK)
Air Emissions (in pounds) from bulk unloading, storage, blending and container filling operations
at a typical chemical distribution facility in Louisville, KY

Type of Air Release (lb)	Throughput (1,000 lb/yr)									
	50	**100**	**250**	**500**	**750**	**1,000**	**2,000**	**3,000**	**5,000**	**10,000**
A1- Container filling emissions	2	4	9	18	28	37	74	110	184	368
A2 - Piping component leaks - delivery of liquid to container filling	1	1	3	6	8	11	22	33	56	112
A3 - Storage tank working + breathing losses (pick closest tank size) 5,000 gallon tank	30	33	44	61	78	96	120	132	155	213
10,000 gallon tank	50	54	64	81	99	116	185	224	247	305
25,000 gallon tank	118	122	132	149	167	184	254	323	462	582
A4 - Piping component leaks - delivery of liquid to storage tank	1	1	1	1	2	3	6	9	14	28
A5 - Blending/mixing tank emissions	3	7	17	35	52	69	139	178	201	259
A6 - Piping component leaks - delivery of liquid to blending/mixing tank	1	2	3	6	9	11	22	33	56	111

Methyl tert butyl ether Look-up Table
(CAS No. 1634-04-4; MTBE)
Air Emissions (in pounds) from bulk unloading, storage, blending and container filling operations
at a typical chemical distribution facility in Louisville, KY

Type of Air Release (lb)	Throughput (1,000 lb/yr)									
	50	**100**	**250**	**500**	**750**	**1,000**	**2,000**	**3,000**	**5,000**	**10,000**
A1- Container filling emissions	50	100	250	499	749	998	1,996	2,994	4,990	9,981
A2 - Piping component leaks - delivery of liquid to container filling	1	1	3	6	8	11	22	33	56	112
A3 - Storage tank working + breathing losses (pick closest tank size) 5,000 gallon tank	457	510	668	932	1,196	1,460	1,742	1,918	2,270	3,149
10,000 gallon tank	732	785	943	1,207	1,471	1,735	2,790	3,194	3,546	4,426
25,000 gallon tank	1,464	1,516	1,675	1,939	2,203	2,467	3,522	4,578	6,689	8,059
A4 - Piping component leaks - delivery of liquid to storage tank	1	1	1	1	2	3	6	9	14	28
A5 - Blending/mixing tank emissions	53	106	264	528	792	1,056	2,111	2,515	2,867	3,746
A6 - Piping component leaks - delivery of liquid to blending/mixing tank	1	2	3	6	9	11	22	33	56	111

n-Butyl alcohol Look-up Table

(Cas No. 71-36-3)

Air Emissions (in pounds) from bulk unloading, storage, blending and container filling operations at a typical chemical distribution facility in Louisville, KY

Type of Air Release (lb)	Throughput (1,000 lb/yr)									
	50	**100**	**250**	**500**	**750**	**1,000**	**2,000**	**3,000**	**5,000**	**10,000**
A1- Container filling emissions	1	2	6	12	17	23	46	69	115	230
A2 - Piping component leaks - delivery of liquid to container filling	1	1	3	6	8	11	22	33	56	112
A3 - Storage tank working + breathing losses (pick closest tank size) 5,000 gallon tank	6	6	8	12	15	18	23	25	30	41
10,000 gallon tank	9	10	12	15	19	22	36	43	47	59
25,000 gallon tank	23	24	26	29	32	36	49	62	89	112
A4 - Piping component leaks - delivery of liquid to storage tank	1	1	1	1	2	3	6	9	14	28
A5 - Blending/mixing tank emissions	0.7	1	3	7	10	13	27	34	39	50
A6 - Piping component leaks - delivery of liquid to blending/mixing tank	1	2	3	6	9	11	22	33	56	111

Naphthalene Look-up Table

(CAS No. 91-20-3)

Air Emissions (in pounds) from bulk unloading, storage, blending and container filling operations at a typical chemical distribution facility in Louisville, KY

Type of Air Release (lb)	Throughput (1,000 lb/yr)									
	50	**100**	**250**	**500**	**750**	**1,000**	**2,000**	**3,000**	**5,000**	**10,000**
A1- Container filling emissions	1	1	1	1	1	1	1	1	2	4
A2 - Piping component leaks - delivery of liquid to container filling	1	1	3	6	8	11	22	33	56	112
A3 - Storage tank working + breathing losses (pick closest tank size) 5,000 gallon tank	1	1	1	1	1	1	1	1	1	2
10,000 gallon tank	1	1	1	1	1	1	1	2	2	2
25,000 gallon tank	1	1	1	1	1	1	2	2	3	5
A4 - Piping component leaks - delivery of liquid to storage tank	1	1	1	1	2	3	6	9	14	28
A5 - Blending/mixing tank emissions	1	1	1	1	1	1	1	1	2	2
A6 - Piping component leaks - delivery of liquid to blending/mixing tank	1	2	3	6	9	11	22	33	56	111

Nitric acid (65%) Look-up Table

(CAS No. 7697-37-2)

Air Emissions (in pounds) from bulk unloading, storage, blending and container filling operations at a typical chemical distribution facility in Louisville, KY

Type of Air Release (lb)	Throughput (1,000 lb/yr)									
	50	**100**	**250**	**500**	**750**	**1,000**	**2,000**	**3,000**	**5,000**	**10,000**
A1- Container filling emissions	1	1	1	1	2	2	4	6	11	21
A2 - Piping component leaks - delivery of liquid to container filling	1	1	3	6	8	11	22	33	56	112
A3 - Storage tank working + breathing losses (pick closest tank size) 5,000 gallon tank	2	2	2	3	4	4	7	8	9	11
10,000 gallon tank	3	3	4	4	5	6	8	11	15	17
25,000 gallon tank	8	8	9	9	10	11	13	16	21	34
A4 - Piping component leaks - delivery of liquid to storage tank	1	1	1	1	2	3	6	9	14	28
A5 - Blending/mixing tank emissions	1	1	1	1	2	3	5	8	12	14
A6 - Piping component leaks - delivery of liquid to blending/mixing tank	1	2	3	6	9	11	22	33	56	111

Phenol Look-up Table

(CAS No. 108-95-2)

Air Emissions (in pounds) from bulk unloading, storage, blending and container filling operations at a typical chemical distribution facility in Louisville, KY

Type of Air Release (lb)	Throughput (1,000 lb/yr)									
	50	**100**	**250**	**500**	**750**	**1,000**	**2,000**	**3,000**	**5,000**	**10,000**
A1- Container filling emissions	1	1	1	1	1	1	3	4	7	15
A2 - Piping component leaks - delivery of liquid to container filling	1	1	3	6	8	11	22	33	56	112
A3 - Storage tank working + breathing losses (pick closest tank size) 5,000 gallon tank	1	1	1	1	1	1	1	1	2	2
10,000 gallon tank	1	1	1	1	1	1	2	2	3	3
25,000 gallon tank	1	1	2	2	2	2	3	3	5	7
A4 - Piping component leaks - delivery of liquid to storage tank	1	1	1	1	2	3	6	9	14	28
A5 - Blending/mixing tank emissions	1	1	1	1	1	1	1	2	2	3
A6 - Piping component leaks - delivery of liquid to blending/mixing tank	1	2	3	6	9	11	22	33	56	111

Phosphoric acid (50%) Look-up Table

(CAS No. 7664-38-2)

Air Emissions (in pounds) from bulk unloading, storage, blending and container filling operations at a typical chemical distribution facility in Louisville, KY

Type of Air Release (lb)	Throughput (1,000 lb/yr)									
	50	**100**	**250**	**500**	**750**	**1,000**	**2,000**	**3,000**	**5,000**	**10,000**
A1- Container filling emissions	0	1	1	1	1	1	1	1	1	1
A2 - Piping component leaks - delivery of liquid to container filling	1	1	3	6	8	11	22	33	56	112
A3 - Storage tank working + breathing losses (pick closest tank size) 5,000 gallon tank	1	1	1	1	1	1	1	1	1	1
10,000 gallon tank	1	1	1	1	1	1	1	1	1	1
25,000 gallon tank	1	1	1	1	1	1	1	1	1	2
A4 - Piping component leaks - delivery of liquid to storage tank	1	1	1	1	2	3	6	9	14	28
A5 - Blending/mixing tank emissions	1	1	1	1	1	1	1	1	1	1
A6 - Piping component leaks - delivery of liquid to blending/mixing tank	1	2	3	6	9	11	22	33	56	111

sec-Butyl alcohol Look-up Table
(CAS No. 78-92-2; 2-Butanol)
Air Emissions (in pounds) from bulk unloading, storage, blending and container filling operations
at a typical chemical distribution facility in Louisville, KY

Type of Air Release (lb)	Throughput (1,000 lb/yr)									
	50	**100**	**250**	**500**	**750**	**1,000**	**2,000**	**3,000**	**5,000**	**10,000**
A1- Container filling emissions	2	5	12	23	35	46	92	138	230	461
A2 - Piping component leaks - delivery of liquid to container filling	1	1	3	6	8	11	22	33	56	112
A3 - Storage tank working + breathing losses (pick closest tank size) 5,000 gallon tank	19	21	27	38	49	60	75	82	97	133
10,000 gallon tank	32	34	40	51	62	73	116	140	155	191
25,000 gallon tank	75	77	84	94	105	116	159	203	289	364
A4 - Piping component leaks - delivery of liquid to storage tank	1	1	1	1	2	3	6	9	14	28
A5 - Blending/mixing tank emissions	2	4	11	22	32	43	87	111	125	161
A6 - Piping component leaks - delivery of liquid to blending/mixing tank	1	2	3	6	9	11	22	33	56	111

Styrene Look-up Table
(CAS No. 100-42-5)
Air Emissions (in pounds) from bulk unloading, storage, blending and container filling operations
at a typical chemical distribution facility in Louisville, KY

Type of Air Release (lb)	Throughput (1,000 lb/yr)									
	50	**100**	**250**	**500**	**750**	**1,000**	**2,000**	**3,000**	**5,000**	**10,000**
A1- Container filling emissions	1	2	6	12	18	24	48	72	120	240
A2 - Piping component leaks - delivery of liquid to container filling	1	1	3	6	8	11	22	33	56	112
A3 - Storage tank working + breathing losses (pick closest tank size) 5,000 gallon tank	10	11	14	20	25	31	41	45	52	70
10,000 gallon tank	17	18	21	27	32	38	59	77	84	103
25,000 gallon tank	41	42	46	51	56	62	84	105	149	200
A4 - Piping component leaks - delivery of liquid to storage tank	1	1	1	1	2	3	6	9	14	28
A5 - Blending/mixing tank emissions	1	2	5	11	16	22	43	61	68	87
A6 - Piping component leaks - delivery of liquid to blending/mixing tank	1	2	3	6	9	11	22	33	56	111

Triethylamine Look-up Table

(CAS No. 121-44-8)

Air Emissions (in pounds) from bulk unloading, storage, blending and container filling operations at a typical chemical distribution facility in Louisville, KY

Type of Air Release (lb)	Throughput (1,000 lb/yr)									
	50	**100**	**250**	**500**	**750**	**1,000**	**2,000**	**3,000**	**5,000**	**10,000**
A1- Container filling emissions	16	31	79	157	236	314	628	942	1,570	3,140
A2 - Piping component leaks - delivery of liquid to container filling	1	1	3	6	8	11	22	33	56	112
A3 - Storage tank working + breathing losses (pick closest tank size) 5,000 gallon tank	98	110	146	204	263	322	382	421	499	695
10,000 gallon tank	164	175	211	270	328	387	623	706	784	981
25,000 gallon tank	369	381	416	475	534	593	828	1,064	1,534	1,824
A4 - Piping component leaks - delivery of liquid to storage tank	1	1	1	1	2	3	6	9	14	28
A5 - Blending/mixing tank emissions	12	24	59	118	177	235	471	554	633	829
A6 - Piping component leaks - delivery of liquid to blending/mixing tank	1	2	3	6	9	11	22	33	56	111

tert-Butyl alcohol Look-up Table

(Cas No. 75-65-0)

Air Emissions (in pounds) from bulk unloading, storage, blending and container filling operations at a typical chemical distribution facility in Louisville, KY

Type of Air Release (lb)	Throughput (1,000 lb/yr)									
	50	**100**	**250**	**500**	**750**	**1,000**	**2,000**	**3,000**	**5,000**	**10,000**
A1- Container filling emissions	8	17	41	83	124	165	331	496	826	1,653
A2 - Piping component leaks - delivery of liquid to container filling	1	1	3	6	8	11	22	33	56	112
A3 - Storage tank working + breathing losses (pick closest tank size) 5,000 gallon tank	47	52	68	95	121	148	183	200	236	324
10,000 gallon tank	79	84	100	127	153	180	286	339	375	463
25,000 gallon tank	182	188	204	230	257	283	389	495	707	877
A4 - Piping component leaks - delivery of liquid to storage tank	1	1	1	1	2	3	6	9	14	28
A5 - Blending/mixing tank emissions	5	11	27	53	80	106	212	266	301	389
A6 - Piping component leaks - delivery of liquid to blending/mixing tank	1	2	3	6	9	11	22	33	56	111

Tetrachloroethylene Look-up Table
(CAS No. 127-18-4; Perchloroethylene)
Air Emissions (in pounds) from bulk unloading, storage, blending and container filling operations
at a typical chemical distribution facility in Louisville, KY

Type of Air Release (lb)	Throughput (1,000 lb/yr)									
	50	**100**	**250**	**500**	**750**	**1,000**	**2,000**	**3,000**	**5,000**	**10,000**
A1- Container filling emissions	3	6	15	30	45	60	120	180	301	602
A2 - Piping component leaks - delivery of liquid to container filling	1	1	3	6	8	11	22	33	56	112
A3 - Storage tank working + breathing losses (pick closest tank size) 5,000 gallon tank	45	48	56	70	85	99	155	186	204	251
10,000 gallon tank	78	81	89	103	117	131	188	244	354	401
25,000 gallon tank	188	191	199	213	227	241	298	354	467	749
A4 - Piping component leaks - delivery of liquid to storage tank	1	1	1	1	2	3	6	9	14	28
A5 - Blending/mixing tank emissions	3	6	14	28	42	56	113	169	279	326
A6 - Piping component leaks - delivery of liquid to blending/mixing tank	1	2	3	6	9	11	22	33	56	111

Toluene Look-up Table

(Cas No. 108-88-3)

Air Emissions (in pounds) from bulk unloading, storage, blending and container filling operations at a typical chemical distribution facility in Louisville, KY

Type of Air Release (lb)	Throughput (1,000 lb/yr)									
	50	**100**	**250**	**500**	**750**	**1,000**	**2,000**	**3,000**	**5,000**	**10,000**
A1- Container filling emissions	5	9	23	47	70	93	187	280	466	933
A2 - Piping component leaks - delivery of liquid to container filling	1	1	3	6	8	11	22	33	56	112
A3 - Storage tank working + breathing losses (pick closest tank size) 5,000 gallon tank	43	47	61	85	108	131	171	187	218	296
10,000 gallon tank	72	77	91	114	137	161	254	320	351	429
25,000 gallon tank	168	173	187	210	234	257	350	443	630	826
A4 - Piping component leaks - delivery of liquid to storage tank	1	1	1	1	2	3	6	9	14	28
A5 - Blending/mixing tank emissions	5	9	23	47	70	93	187	253	284	362
A6 - Piping component leaks - delivery of liquid to blending/mixing tank	1	2	3	6	9	11	22	33	56	111

Trichloroethylene Look-up Table

(CAS No. 79-01-6)

Air Emissions (in pounds) from bulk unloading, storage, blending and container filling operations at a typical chemical distribution facility in Louisville, KY

Type of Air Release (lb)	Throughput (1,000 lb/yr)									
	50	**100**	**250**	**500**	**750**	**1,000**	**2,000**	**3,000**	**5,000**	**10,000**
A1- Container filling emissions	11	22	55	109	164	219	438	657	1,095	2,190
A2 - Piping component leaks - delivery of liquid to container filling	1	1	3	6	8	11	22	33	56	112
A3 - Storage tank working + breathing losses (pick closest tank size) 5,000 gallon tank	153	163	192	242	291	340	537	604	670	834
10,000 gallon tank	259	269	299	348	397	446	644	841	1,145	1,309
25,000 gallon tank	588	597	627	676	726	775	972	1,169	1,563	2,549
A4 - Piping component leaks - delivery of liquid to storage tank	1	1	1	1	2	3	6	9	14	28
A5 - Blending/mixing tank emissions	10	20	49	99	148	197	394	591	895	1,060
A6 - Piping component leaks - delivery of liquid to blending/mixing tank	1	2	3	6	9	11	22	33	56	111

Xylene (mixed isomers) Look-up Table
(Cas No. 1330-20-7; includes individual isomers)
Air Emissions (in pounds) from bulk unloading, storage, blending and container filling operations
at a typical chemical distribution facility in Louisville, KY

Type of Air Release (lb)	Throughput (1,000 lb/yr)									
	50	**100**	**250**	**500**	**750**	**1,000**	**2,000**	**3,000**	**5,000**	**10,000**
A1- Container filling emissions	2	4	9	18	27	35	71	106	177	354
A2 - Piping component leaks - delivery of liquid to container filling	1	1	3	6	8	11	22	33	56	112
A3 - Storage tank working + breathing losses (pick closest tank size) 5,000 gallon tank	10	11	15	20	26	32	42	45	53	72
10,000 gallon tank	17	18	22	27	33	39	61	78	86	104
25,000 gallon tank	42	43	46	52	57	63	86	108	154	203
A4 - Piping component leaks - delivery of liquid to storage tank	1	1	1	1	2	3	6	9	14	28
A5 - Blending/mixing tank emissions	1	2	6	11	17	23	45	62	69	88
A6 - Piping component leaks - delivery of liquid to blending/mixing tank	1	2	3	6	9	11	22	33	56	111

City	*State*	*City Factor*
Homer	AK	0.52
Birmingham	AL	1.21
Montgomery	AL	1.31
Little Rock	AR	1.21
Fort Smith	AR	1.18
Phoenix	AZ	1.67
Tucson	AZ	1.53
Bakersfield	CA	1.38
San Francisco	CA	1.02
Long Beach	CA	1.29
Los Angeles	CA	1.2
Sacramento	CA	1.21
Santa Maria	CA	1.07
Denver	CO	0.91
Grand Junction	CO	0.97
Wilmington	DE	0.93
Miami	FL	1.69
Atlanta	GA	1.17
Savannah	GA	1.34
Honolulu	HI	1.79
Des Moine	IA	0.83
Boise	ID	0.9
Chicago	IL	0.81
Springfield	IL	0.91
Indianapolis	IN	0.88
Wichita	KS	1.04
Louisville	KY	1
Baton Rouge	LA	1.4
Lake Charles	LA	1.41
New Orleans	LA	1.42
Boston	MA	0.84
Baltimore	MD	0.97
Portland	ME	0.71
Detroit	MI	0.79
Grand Rapids	MI	0.77
St. Paul	MN	0.71
St. Louis	MO	0.99
Jackson	MS	1.31
Billings	MT	0.77

City	*State*	*City Factor*
Raleigh	NC	1.11
Bismarck	ND	0.66
Lincoln	NE	0.87
Concord	NH	0.73
Newark	NJ	0.92
Roswell	NM	1.27
Las Vegas	NV	1.45
Buffalo	NY	0.75
New York	NY	0.91
Cleveland	OH	0.81
Columbus	OH	0.87
Toledo	OH	0.8
Oklahoma City	OK	1.15
Tulsa	OK	1.15
Astoria	OR	0.81
Portland	OR	0.89
Philadelphia	PA	0.93
Pittsburgh	PA	0.83
Providence	RI	0.83
Columbia	SC	1.27
Sioux Falls	SD	0.74
Memphis	TN	1.19
Amarillo	TX	1.11
Corpus Christi	TX	1.59
Dallas	TX	1.36
Houston	TX	1.44
Midland-Odessa	TX	1.34
Salt Lake City	UT	0.93
Richmond	VA	1.06
Burlington	VT	0.69
Seattle	WA	0.83
Green Bay	WI	0.68
Charleston	WV	0.96
Huntington	WV	0.97
Cheyenne	WY	0.77