

3.6 Chemical Usage

3.6.1 General Description of Source Category

LANL scientists conduct a wide variety of research and development (R&D) activities. The R&D activities often involve the use of small quantities of various chemicals, many of which are CAA-regulated pollutants. Emissions from these activities cannot be permitted or estimated in conventional ways because the activities and chemicals being used are constantly changing. LANL is proposing to limit emissions from R&D chemical use to ensure the Laboratory remains below PSD major source status, and below major source thresholds for hazardous air pollutant emissions.

Chemicals are used in hundreds of different areas of the Laboratory. For safety reasons, many activities occur under lab hoods with forced ventilation out a stack or into general building exhaust systems. However other activities occur in open areas of buildings, outdoors, or in other research locations. There are no defined stacks or point sources where emissions from chemical use can be easily quantified.

Chemical use throughout the Laboratory is tracked diligently through a chemical inventory tracking system. Purchases of regulated chemicals go through a central purchasing system before they are brought on-site. When chemicals are brought on-site, they are bar-coded and entered into a facility-wide chemical tracking database. Based on the past two year's analysis approximately 40,000 – 50,000 separate chemical purchase line-items are entered into the database each year.

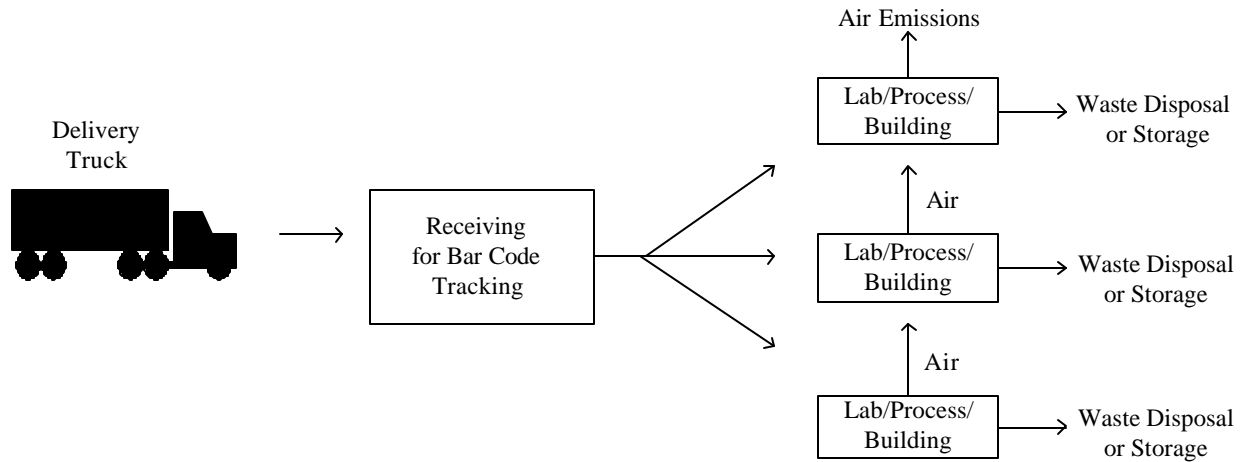
3.6.2 Operating Schedule

There are no set operating schedules for R&D activities. Chemical use can occur at any time. For the purpose of this application the operating schedule is 8760 hours per year.

3.6.3 Process Flow Diagram

Figure 3.6-1 shows a simplified process flow diagram of emissions from chemical use.

Figure 3.6-1. Process Flow Diagram for R & D Chemical Usage



3.6.4 Emissions

For the past several years, LANL has submitted estimates of VOC and HAP emissions from Laboratory-wide chemical use as part of the annual emission inventory required under 20.2.73 NMAC. For the most part, the emission estimates reported are based on a very conservative assumption that the total amount of regulated chemicals purchased is equivalent to total emissions. This is a very conservative approach because it assumes all chemicals purchased are used and evaporate as air emissions. It does not take into account chemicals that are purchased and remain in a process, or the amount of chemicals that are disposed of as waste. Occasionally, process knowledge is used to refine the emission estimates. Chemicals used for activities that qualify as trivial or exempt activities are deleted from the analysis (e.g., grounds and building maintenance, calibration of laboratory equipment, etc.). Table 3.6-1 summarizes the actual VOC and HAP emissions from chemical use for the past two years, as reported in the 20.2.73 NMAC Emissions Inventory submittal for LANL. Table 3.6-2 provides a summary of the highest volume individual HAPs for the past two years.

Table 3.6-1. Past Actual VOC and HAP Emissions from Chemical Use as Reported in LANL's Annual Emissions Inventory

Year	VOC (tons)	Total HAPs (tons)
2000	10.7	6.5
2001	18.6	7.4

Table 3.6-2. Past Actual Individual HAP Emissions from Chemical Use as Reported in LANL's Annual Emissions Inventory

Hazardous Air Pollutant	2000 Actual Emissions ^(a) (ton/year)	2001 Actual Emissions ^(a) (ton/year)
Hydrochloric Acid	3.11	1.74
Ethylene Glycol	0.75	0.72
Methanol	0.71	0.91
Trichloroethylene	0.41	0.51
Methylene Chloride	0.34	0.44

(a) Past actual emissions of the top 5 individual HAPs are shown, as reported in LANL's Annual Emissions Inventory.

3.6.5 Emissions Control Equipment

There are no air pollution controls for chemical usage for research and development activities.

3.6.6 Applicable Requirements

There are currently no applicable regulatory requirements for emissions from chemical use. LANL is proposing emission limits to ensure the Laboratory remains below PSD major source status and below major source thresholds for HAPs. Proposed facility-wide limits are included in Chapter 2 of this application.

3.6.7 Proposed Monitoring, Recordkeeping, and Reporting

Recordkeeping is proposed as adequate monitoring to ensure that emissions from chemical use stay below the proposed emission limits. Table 3.6-3 presents the proposed recordkeeping and reporting.

Table 3.6-3. Proposed Monitoring, Recordkeeping, and Reporting for Facility-Wide Chemical Use

Source	Monitoring, Recordkeeping, and Reporting
Facility-wide Chemical Use	<p><i>Monitoring/Recordkeeping:</i></p> <ul style="list-style-type: none">• Maintain records of chemical purchasing through facility-wide chemical tracking system. (LANL proposed condition) <p><i>Reporting:</i></p> <ul style="list-style-type: none">• Report criteria pollutant and HAP emissions on a semiannual basis. (20.2.73.300 NMAC for criteria pollutants and LANL proposed condition for HAPs and semiannual basis)• Submit semiannual report of any required monitoring within 45 days from the end of each reporting period. The reporting periods are January to June and July to December. (20.2.70.302(E)(1) NMAC)