



# Lab Ventilation Management Program

## Introduction

The Lab Ventilation Management Program (LVMP) helps maintain safe, more sustainable, and potentially healthier lab spaces through improved integration of safety, facilities, and lab management activities. The LVMP enhances and establishes processes for reviewing lab activities and equipment, helping Harvard improve safety and reach its sustainability goals.

Key LMVP stakeholders include facilities, science operations, lab directors, faculty, the Office for Sustainability, and EH&S.

Key program priorities:

- Promoting safe, effective, and energy-efficient labs through collaborative problem solving and flexible building design.
- Implementing a continuous process for ongoing safety assessments and communications between EH&S, lab personnel, and facilities managers.
- Monitoring ventilation performance through consistent communications between EH&S, key lab stakeholders, and building managers.
- Implementing solutions based on current research about health, climate, and resiliency.
- Developing a process to continuously verify building safety and energy performance.

For more information about the LMVP, please contact your [local EH&S Lab Safety Advisor \(LSA\)](#) or [Chiu Oan Ngooi](#).



## Principles of Effective Lab Ventilation

Under the LMVP, labs use localized ventilation infrastructure, like fume hoods, exposure control devices (ECDs), or direct equipment exhaust, to capture hazardous emissions at their source. This method is more effective than primarily relying on the general lab room ventilation system to dilute and remove inhalation hazards.

The LMVP also includes proactive measures to avoid potentially unsafe practices or equipment uses that could develop from lab personnel turnover or changes in experiments or equipment.

By reducing the potential for hazardous ambient air, labs can decrease the lab room's general ventilation rate, or specifically the air changes per hour (ACH), which increases spare capacity and flexibility for existing lab ventilation systems. These changes make labs safer, healthier, and more energy efficient.

## Assessment Process

To implement the LVMP, EH&S performs an initial assessment of each lab and then continues to conduct assessments and walkthroughs following the assessment schedule.

1. Perform a walkthrough to identify opportunities for LVMP implementation, including assessing hazards, work practices, and existing local ventilation devices and infrastructure. If necessary, perform air monitoring to assess inhalation risks outside ECDs.
2. Review the assessment to determine the safe ventilation rate and any necessary additional ventilation devices or changes in work practices.
3. Coordinate with the lab group's Lab Safety Officer (LSO) and facilities management team to evaluate the feasibility of assessment recommendations.
4. If necessary, adjust ventilation rates or install additional ventilation devices.



5. Display signage indicating the last assessment date to remind researchers to work with chemicals in hoods and ECDs and engage EH&S to conduct a hazard assessment before starting work with new or modified chemicals or processes.
6. Make assessment findings available to LSOs and Principal Investigators (PI).

## Assessment Schedule

Assessment Type	Frequency
Research activity safety assessment	After initial assessment, every 12 months or whenever lab members (including administrators and faculty) tell EH&S that the lab is introducing new hazards, chemicals, or processes.
Verification walkthrough	Quarterly

## Maintaining Ventilation Effectiveness

To ensure the LVMP is as effective as possible in your building:

- Verify that the building's lab ventilation system was recently balanced (calibrated and commissioned).
- Consider installing occupancy-based sensors in lab rooms to reduce ventilation rates in unoccupied rooms.
- Consider installing Direct Digital Controls (DDC) in each room to easily adjust room ventilation rates.
- Readily integrate localized ventilation devices to manage inhalation risks as needed (labs across Harvard already use snorkel exhaust arms).
- Consider room emergency purge capabilities to rapidly remove vapors from any spills and allow faster room reoccupancy.