

# Adequate Ventilation for Copiers/Printers

This document provides information about two independent methods of achieving adequate indoor air quality for photocopy and printing rooms. Primary guidance comes from the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) in the form of ANSI/ASHRAE Standard 62.1 – 2013, Ventilation for Acceptable Indoor Air Quality.

## VENTILATION RATE PROCEDURE

This procedure is suitable for many conventional office settings. The minimum recommended exhaust rate for copy and printing rooms is 0.5 cfm/ft<sup>2</sup> (cubic feet per minute per square foot of floor space) or 2.5 liters per second per square meter of floor space. This must be replaced with an equal volume of fresh, outside air or adequately filtered, recirculated air delivered with adequate mixing.

For office buildings, a minimum of 10% outside air is generally mixed with recirculated air. This is a method of providing enough clean air to the space to be confident that emissions will be diluted to acceptable levels.

## INDOOR AIR QUALITY PROCEDURE

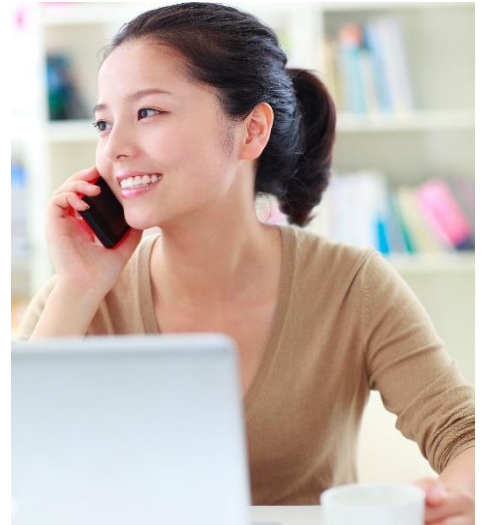
This method ensures acceptable indoor air quality by directly controlling known and specifiable air contaminants such as ozone\*, solvents and odors that may be released from specific locations. It may result in overall ventilation rates that are more, or less, than those called for by the Ventilation Rate Procedure described above. However, changes in space use, contaminants or operation may require re-evaluation of the ventilation design. This is a method of removing emissions near their source to ensure that acceptable levels are maintained in the workspace.

Ventilation kits are available for some Xerox® printers. These are exhaust ventilation systems that remove air directly from the machine to an exterior location. When a ventilation kit is installed, acceptable air quality associated with the usual emissions from the machine can be achieved.

## ROOM AIR CHANGES PER HOUR

Some customers are more comfortable measuring ventilation in a room by air changes per hour (ACH). The ventilation rate of 0.5 cfm/ft<sup>2</sup> works out to  $(30 \div \text{Ceiling Height})$  air changes per hour. The illustration on the next page shows the recommended hourly air changes for several typical room ceiling heights. For the average office or print room with 8 ft ceilings and one printer, approximately 4 ACH is recommended. Additional air exchange may be necessary when multiple printers are installed in the same room. This could vary on a case-by-case basis; however, typically an increase to 5-6 air changes per hour should be adequate to maintain acceptable indoor air quality.

\*For use with the Indoor Air Quality Procedure, the World Health Organization (WHO) suggests that continuous ozone exposure be maintained below 0.05 ppm (parts of ozone per million parts of air).



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## ROOM AIR CHANGES PER HOUR (ACH) FOR TYPICAL ROOM HEIGHTS

