
## 1. WHY VENTILATE YOUR STUDIO?

All waxes, when they are melted– whether as candles, batik, or encaustic—release a mixture of invisible fume (in the form of tiny particles) and gases, such as acrolien and aldehydes. At the proper working temperature of encaustic [below 220°F], the concentration of these fumes and gases is well below any dangerous level. Still, the emissions may cause irritation if they are not vented. Un-vented wax emissions from heated encaustic may cause headaches and nausea. The hotter wax is, the more concentrated these emissions become and the greater the degree to which they may affect you.

It is important to work in a well-ventilated area at all times, regardless of how long you spend in the studio or how sensitive you are to the emissions initially. Respirators are not a good substitute for ventilation because they are not approved for acrolein and there is no single cartridge that would filter out all the contaminants.

## 2. PRINCIPLES OF VENTILATION – There are two main factors in ventilating your studio

- Exhaust – getting rid of the contaminated air.
- Makeup – replacing air that has been exhausted with uncontaminated air

When you exhaust air you create negative air pressure, similar to a balloon collapsing when you let the air out. If you don't make up that air, you reduce the ability to exhaust more air.
Makeup air can come from a window on an opposite or adjacent wall or from a doorway if your studio is in a large building. In hot or cold weather, however, that can mean decreasing your A/C or your heat. So it is important to control the amount of air that you exhaust (see baffles below).

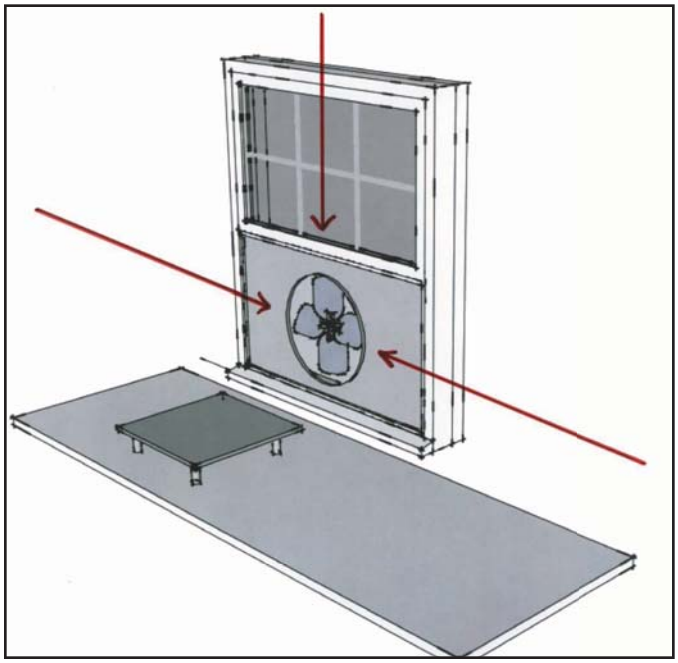
## 3. LOCALIZED EXHAUST SYSTEM

### WINDOW FAN

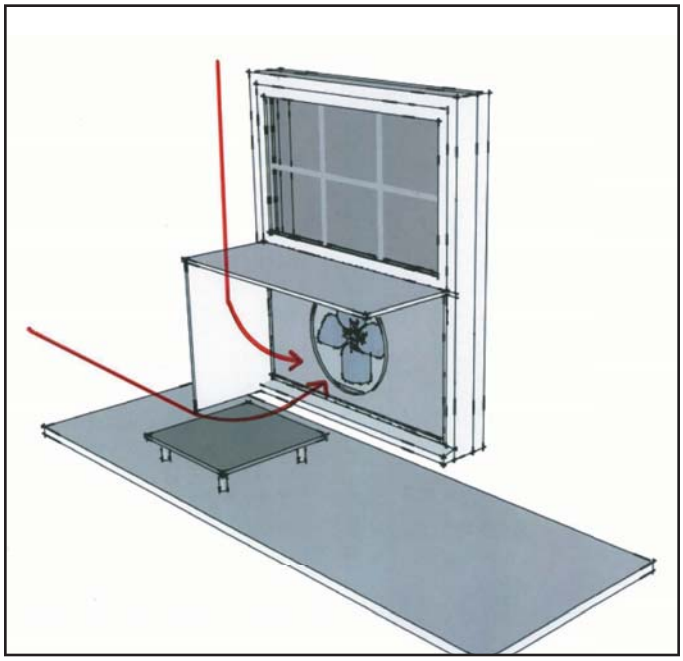
Setting up a window fan in a defined work area can provide you with adequate exhaust.
This is inexpensive and simple to install. It is also an easy way to experiment with your ventilation without investing much time or money.

To set up this system, you will need to have a window a little higher than the height of your worktable.

- Double-hung windows that slide up and down or horizontal windows that slide back and forth on a track can be easily adapted for a fan. However, if your window is a single pane or it opens outward, it may be necessary to remove the window and replace it with a panel on which a fan can be mounted.
- All areas between the fan and the window frame should be sealed and made airtight. The more completely you seal around the fan, the more effective it will be.
- Fan strength is measured by the number of cubic feet per minute (CFM) that it exhausts. Not all fans list their CFM but, a fan with several speed settings will give you greater flexibility when setting up your system.



Without baffles, air is drawn from every direction.



With baffles airflow is directed over the source of fumes.

· Location of fan. The air velocity is greatest next to the fan. Therefore, the closer your work area is to the fan, the better your exhaust will be.

· Ideally, your table should be lined up lengthwise against the window so that the wax emissions from your palette and your painting area will be vented adequately. To get the full effect of the fan, it should be installed so that the lowest blade point is about 3 inches higher than your palette. Remember, heat makes the encaustic emissions rise. The fan should capture them just after they begin to rise.

· A very simple way to test airflow is to light a stick of incense. The smoke will tell you if air is being drawn steadily through the fan and at what distance from the fan the velocity and focus of the airflow begin to decrease. This will help you determine the best arrangement for your work area and the most effective design for baffling if necessary.

· The airflow velocity should be strong enough that, with your head over your palette, you cannot detect the odor of the melted wax. Since the emissions from heated wax are odorant, it is easy to detect if you are breathing them in. If you have been working with encaustic for a long period and have become accustomed to the smell, have someone else double check for odor.

## 4. DILUTION VENTILATION

The principle of this type of ventilation is to reduce the concentration of fumes by exchanging large amounts of air. An exhaust fan pulls out contaminated and uncontaminated air and an equal amount of fresh air is brought in through open windows or replaced by intake fans. This system is best suited for temperate climates where the heating or cooling of the room is not an issue.

## 5. DUCT SYSTEM

If you don't have easy access to a window, you may need to have some ducting installed to remove contaminated air. In this case you may want to consult an HVAC technician. Feel free to contact us for more information about this type of system.

## SUMMARY

Ventilating a studio can be approached using common sense. Remember the whole purpose of ventilation is to remove contaminated air from your workspace. Using your senses is a simple way to know if your system is working. Step back from your work area and ask these questions:

1 - Is the wax smell overly strong or heavy?
2 - Do you feel irritation in your eyes, nose, or throat? Do you notice any other symptoms of overexposure?
3 - Have there been any changes in the way the system functions?

If you answer yes to any of these questions, you will need to reassess your system. If you answer no, then your system is probably doing the job it is supposed to be doing.