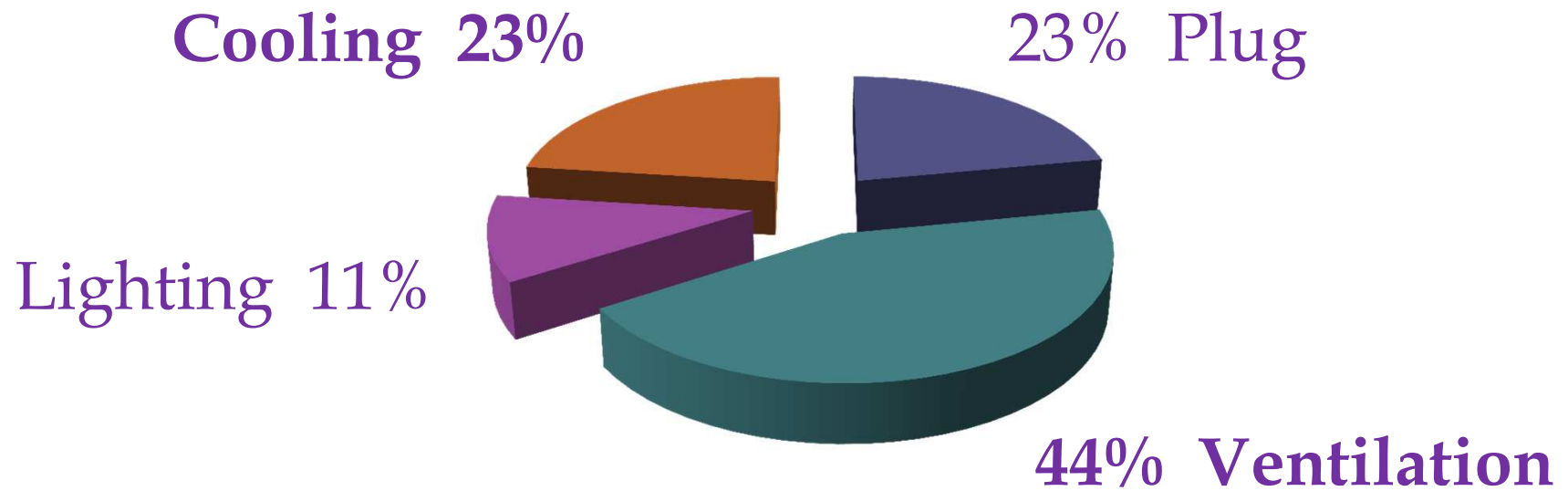


# LOWERING LABORATORY VENTILATION COST

Charles Akers PhD  
Isolation Sciences LLC  
716.984.9220  
[isolationosciences.com](http://isolationosciences.com)

# Ventilation is an Energy Hog

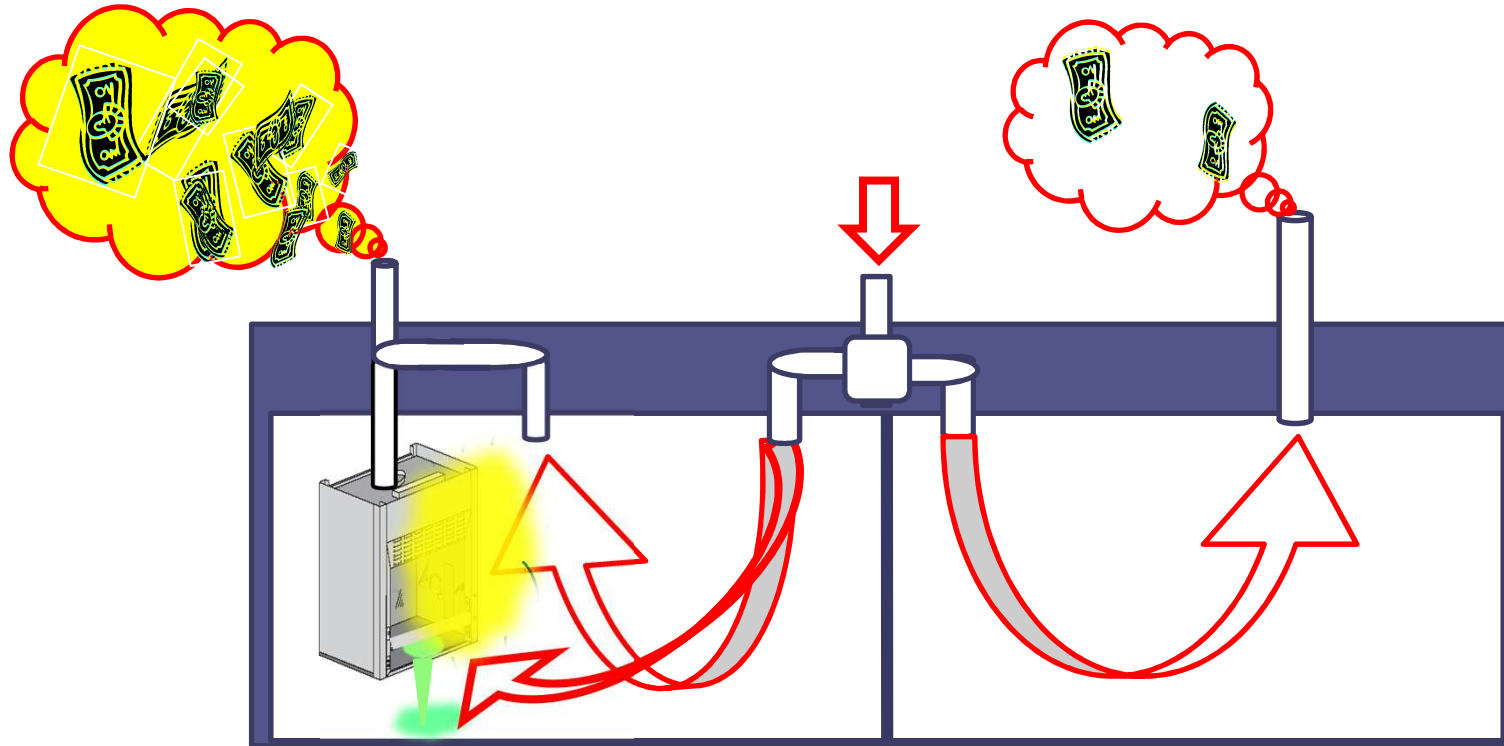


REF: Louis Stokes Research Laboratory  
[NIH, Bethesda, MD]

Isolation  
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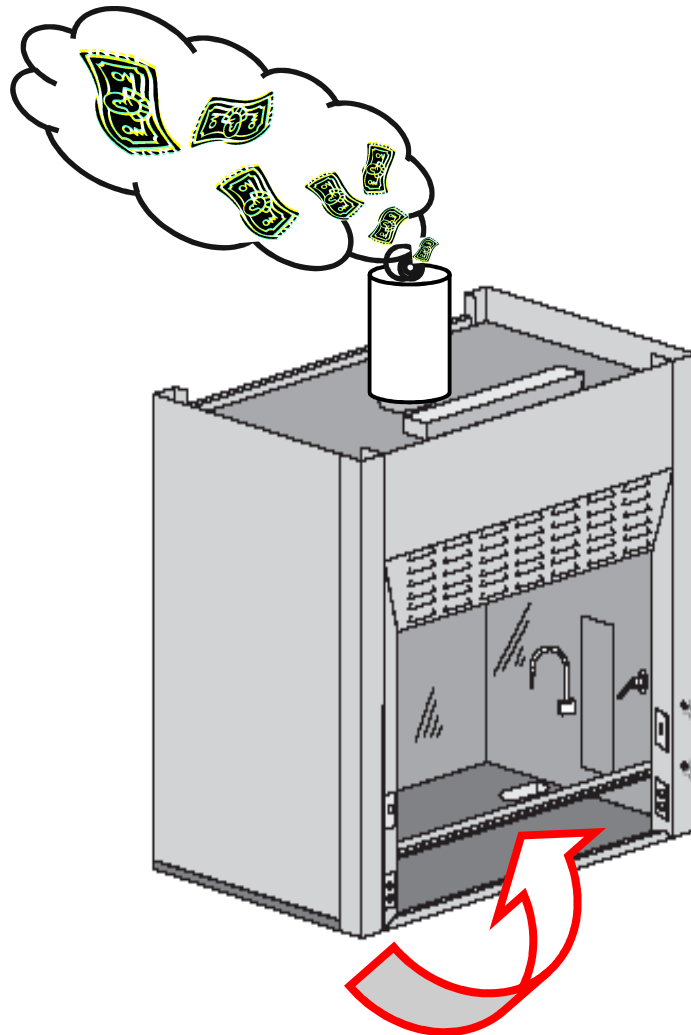
# Laboratory Energy Problem

Lab Safety is an Energy Hog



# Energy Problem

## Fume Hood is an Energy Hog



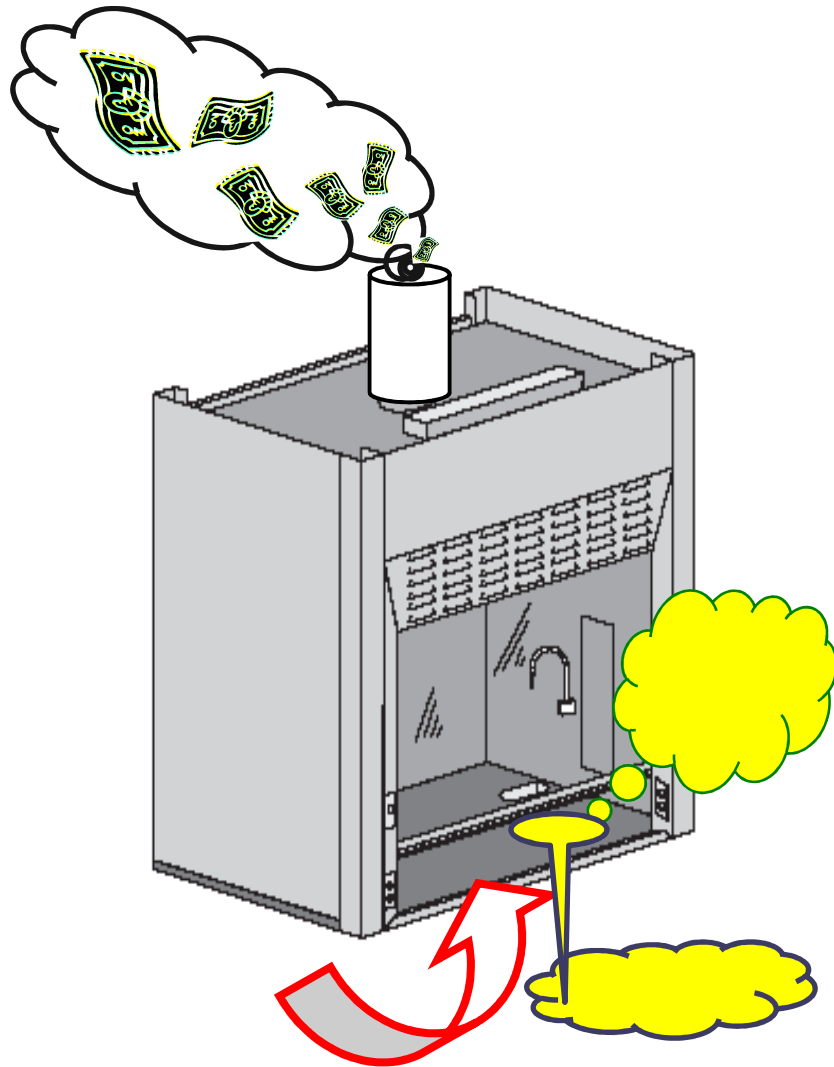
Fume hoods waste in the US over \$5B annually or each fume hood wastes enough energy to heat 3-4 homes

*and*

fume hoods lowers the laboratory IAQ

# Safety Problem

## Fume Hoods contaminate the lab



*Room Air Dynamics  
forming Eddy Currents*

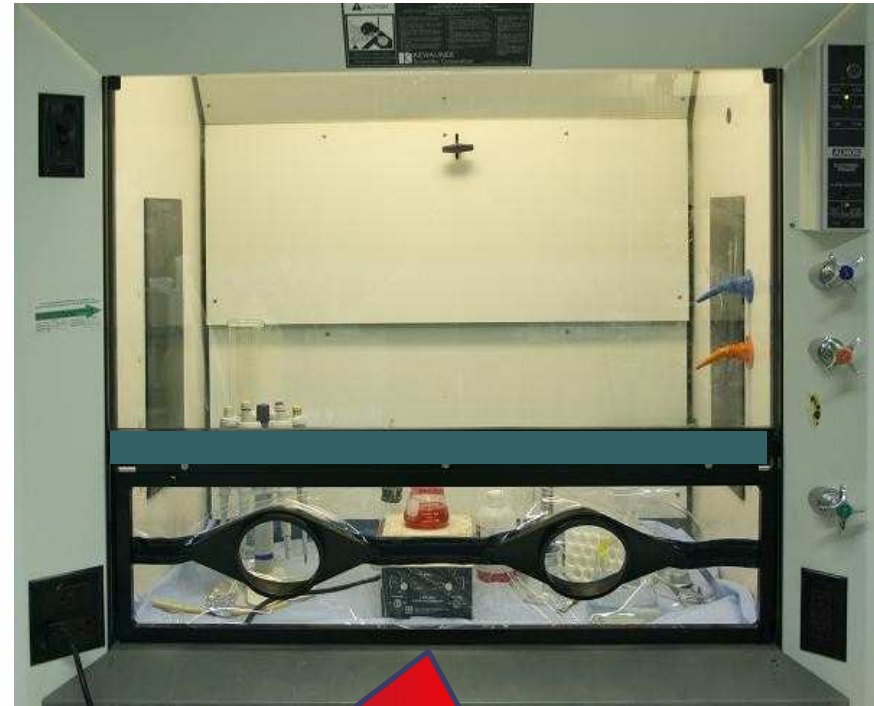
*Spills and Splashes*

*Energetic Events blown  
out of fume hood*

# CAP Retrofit Kit

## *FEATURES*

- Fits under the sash
- Clear PU barrier film
- Movable Access Ports



# 3<sup>rd</sup> Party Validation – Air Exhausted

|                                   |                |
|-----------------------------------|----------------|
| Sash Open                         | 691 cfm        |
| Sash Closed with CAP              | <u>120 cfm</u> |
| <i>Reduction in Exhausted Air</i> | <i>570 cfm</i> |

## *Test Condition:*

6 ft fume hood

Working sash height = 18inches

Minimum Air flow = ANSIZ9.5-2010

# 3<sup>rd</sup> Party Validation - Containment

|        | <u>Min</u> | <u>Max</u> | <u>Mean</u> |
|--------|------------|------------|-------------|
| Left   | 0.00       | 0.02       | 0.006       |
| Center | 0.00       | 0.02       | 0.002       |
| Right  | 0.00       | 0.01       | 0.001       |

[ppm]

## *Test Conditions:*

*ASHRAE-110 Min level 0.100ppm*

*SF6 rate = 8 liters/min*



Site: Buffalo Niagara Medical  
Campus Innovation Center  
Tester: Air Filtration Management  
[3<sup>rd</sup> party NEEB Certified]

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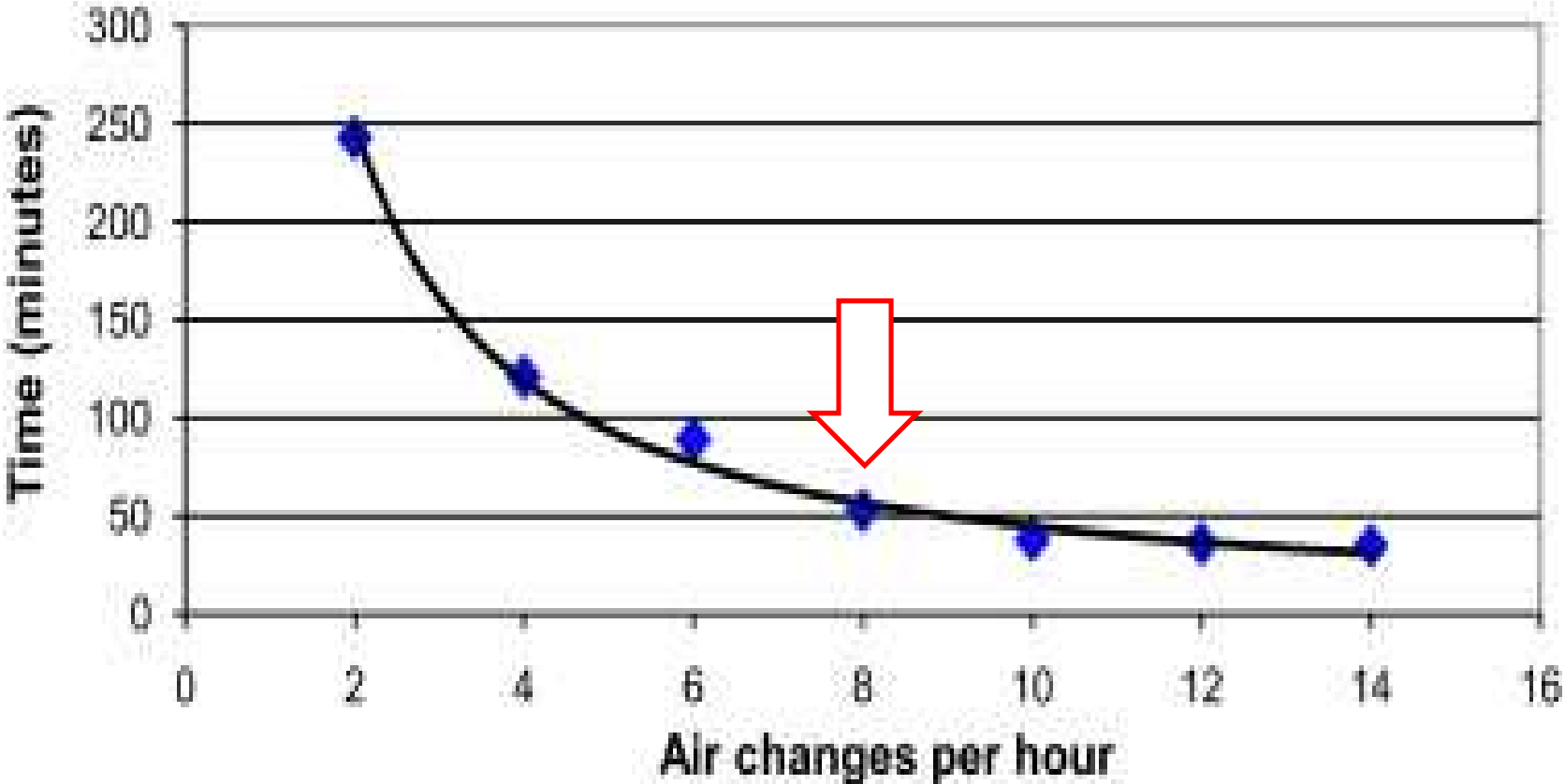
# CAP Retrofit Kit



**REDUCES THE NEED FOR  
CONDITIONED FACILITY  
AIR**

**REDUCES LABORATORY  
CONTAMINATION**

# Laboratory Ventilation Rate ACH vs Time to Clear



Klein RC, King C, and Kosior A, Journal of Chemical Health and Safety, 16(2009)36-42



# Laboratory Ventilation Rates

- Control banding: classify lab hazard
  - New standard defines Hazard Level A,B, & C
- Occupied versus unoccupied vent rates
  - Setback control strategy by lab's hazard classification
  - Unoccupied air change rate reduced by 2ACH
- Results...
  - Lab 'A' 8/6 ACH
  - Lab 'B' 6/4 ACH
  - Lab 'C' 4/2 ACH

Source: Bell, G, Optimizing laboratory Ventilation Rates,  
Labs21 Advance Course Series, 2010

# CAP Retrofit Kit

## A Triple Benefit to Your Bottom Line



- Reduces Energy Costs
- Reduces Carbon Footprint
- Reduces Safety Risk



Isolation  
**Sciences**

Chuck Akers  
Isolation Sciences  
716-984-9220  
cakers@isolationosciences.com  
Isolationosciences.com