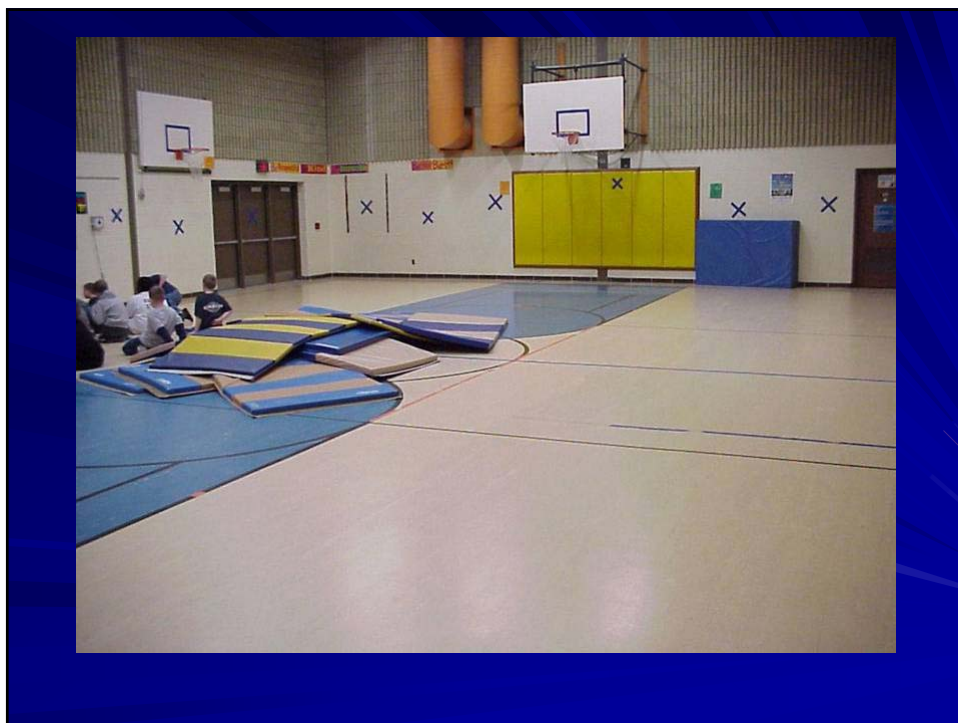




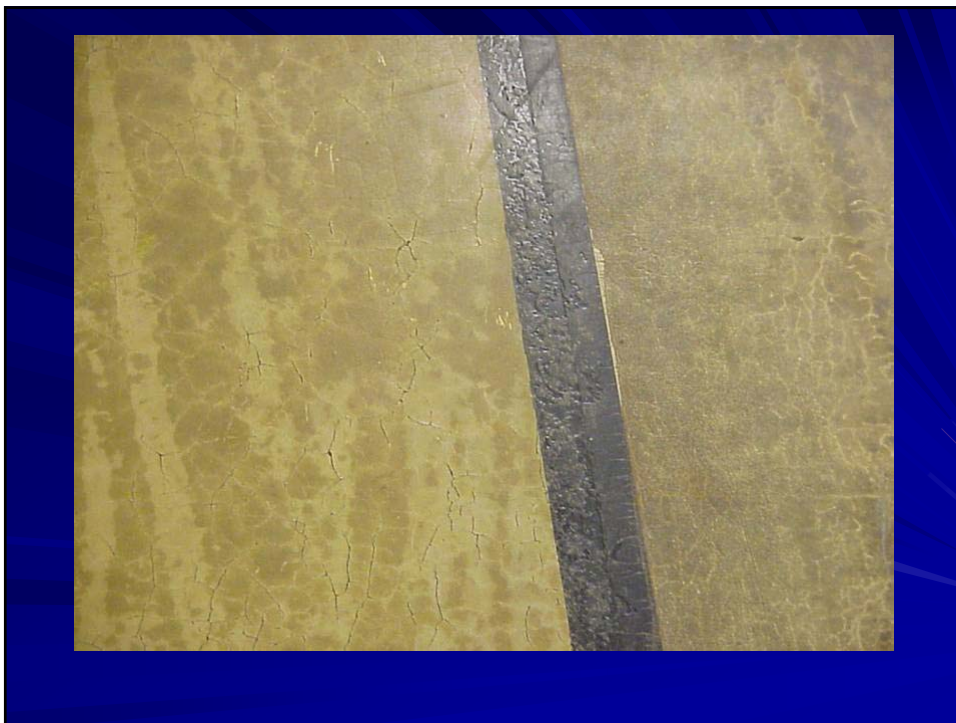
Health Consultations

- OH – Westerville Schools (2003)
- MI – Mid-Michigan Mercury Floor (2004)
- OR – Salem-Keizer School District 3M Flooring (2006)
- MN
 - Mercury Vapor Release/Athletic Polymer Floors (2006)
 - Bethel University (2008)



Gym Dandy!





Michigan's Experience

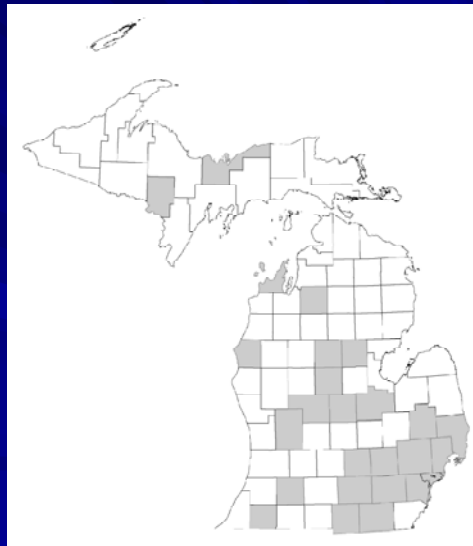
- Letters to schools
 - "...potential chemical contamination issue..."
 - "...free screening..."
 - Signed by dept admin

Questions/Checklist

- Room dimensions, features (stage, balcony, etc.)
- Floor characteristics (mfr, install date, modified?, surface condition)
- Environment (HVAC cfm, room temps, how cleaned, how used)

Responses from schools

- Worked with Dept Ed
- ~4,500 letters sent
- 70-75 responses
- 45-50 potential +'s



Concerns related to floors

- **Exposures**
- Disposal options
- New flooring over the old
- Parental and community concern –
Risk Communication

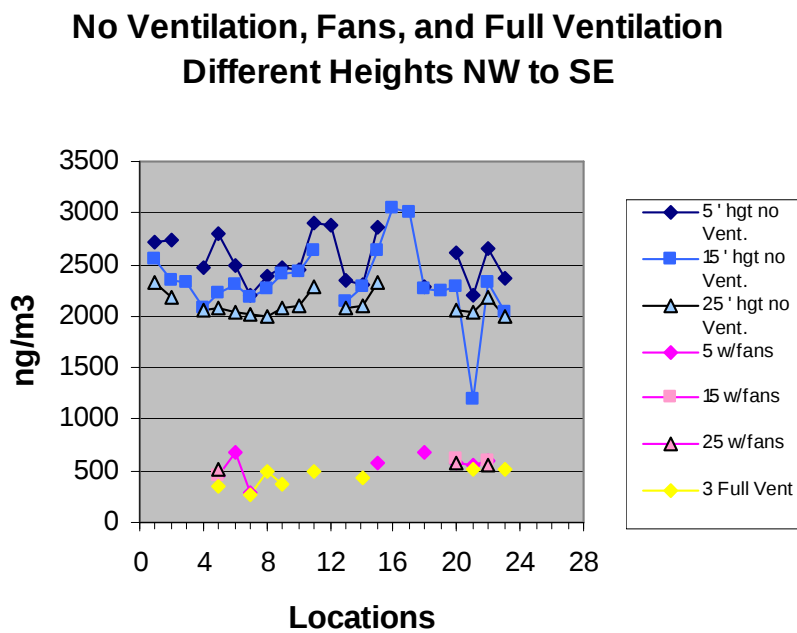
After 24 years,...
emissions from 1 (large) gym
still about **800 ug per minute**

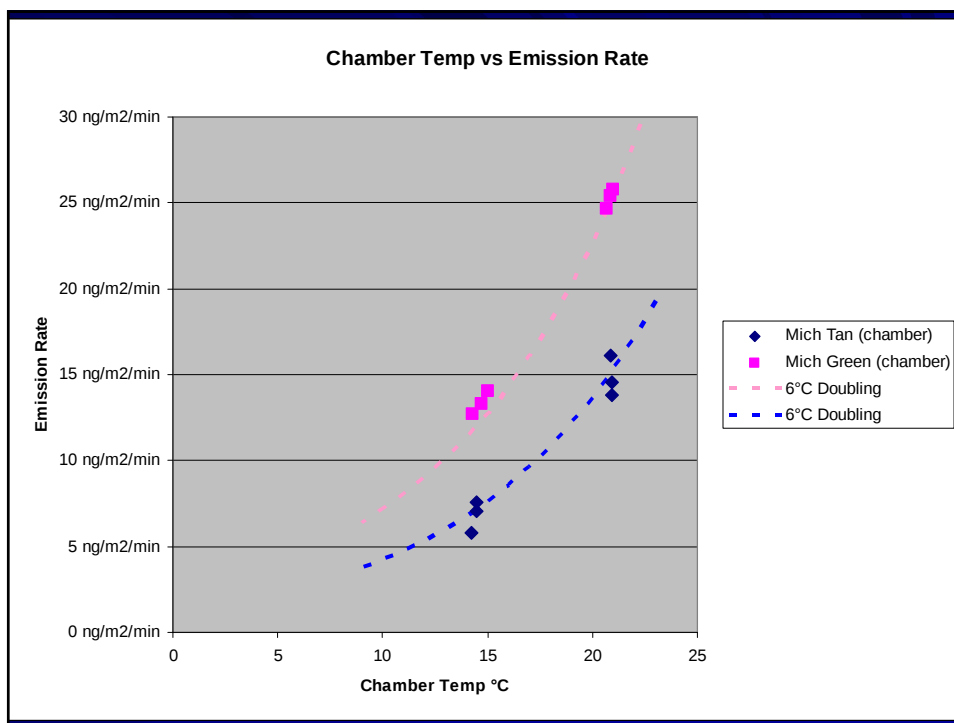
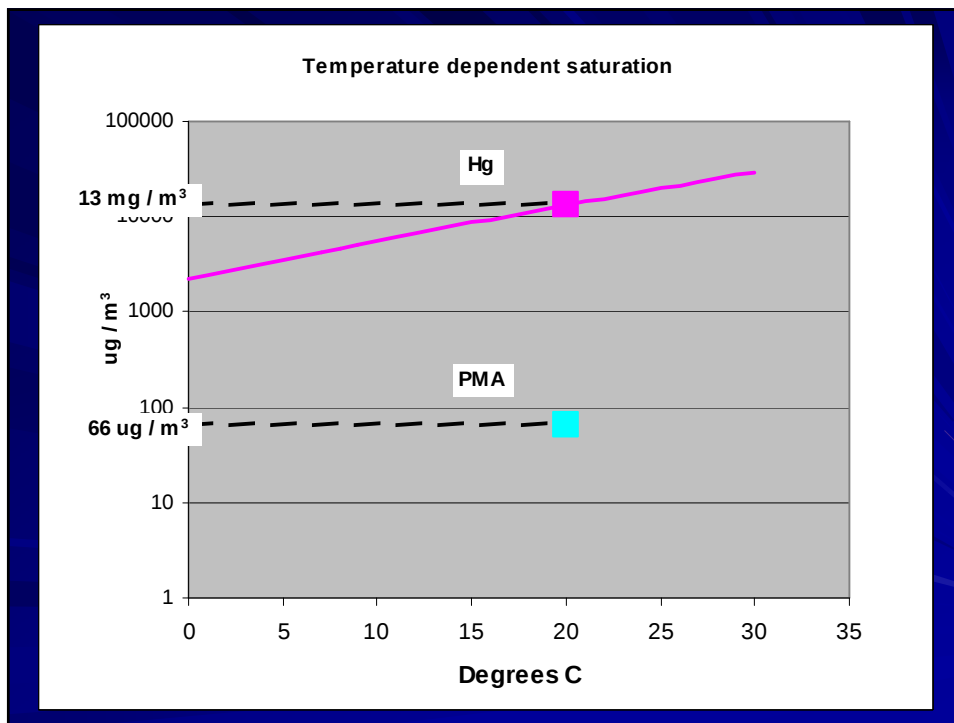
Equivalent to breaking 1 CFL every
4-5 minutes - -

~ 280 broken CFLs per day

Exposure Concentrations

- **Mixing**
- **Building Ventilation**
- **Temperature**





Reference Exposure Concentrations

- Chronic – EPA RfC – 300 ng/m³
- Acute – CA OEHHA – 1800 ng/m³

Exposure

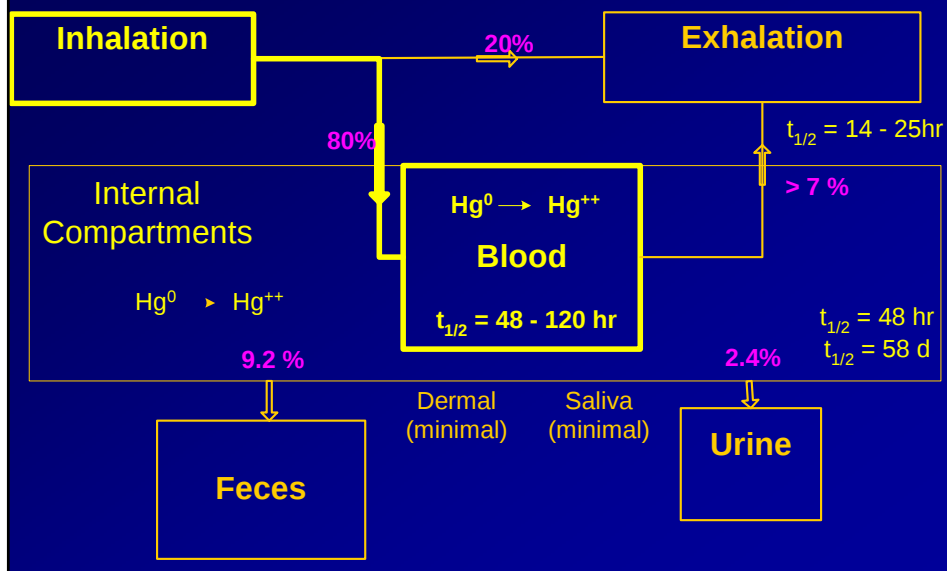
$\text{RfC} * 14 / 5 = \text{Workplace Exposure}$

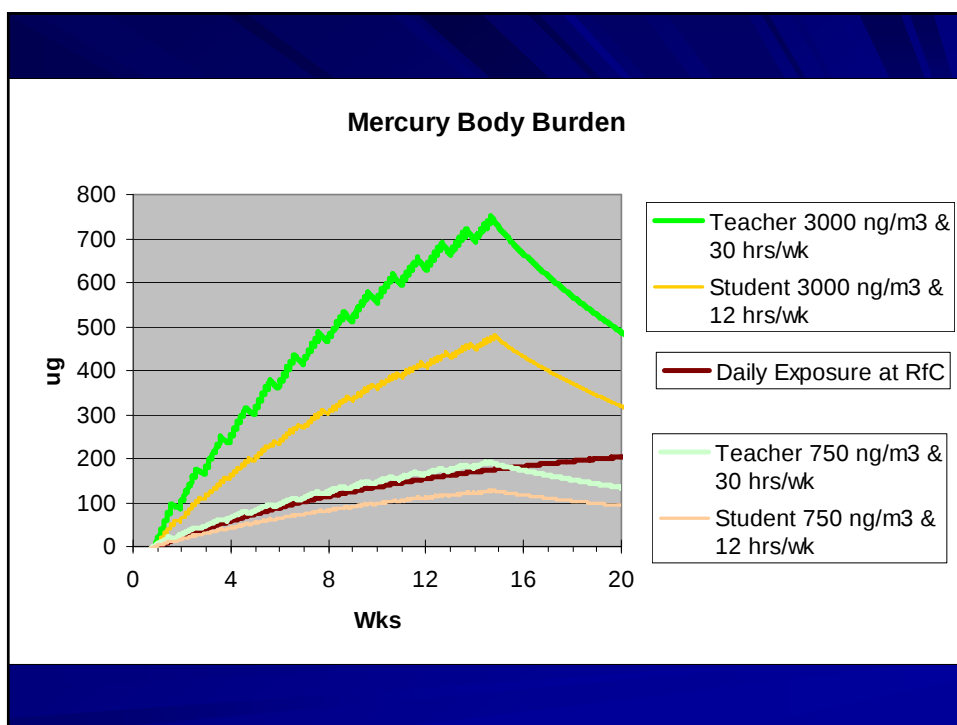
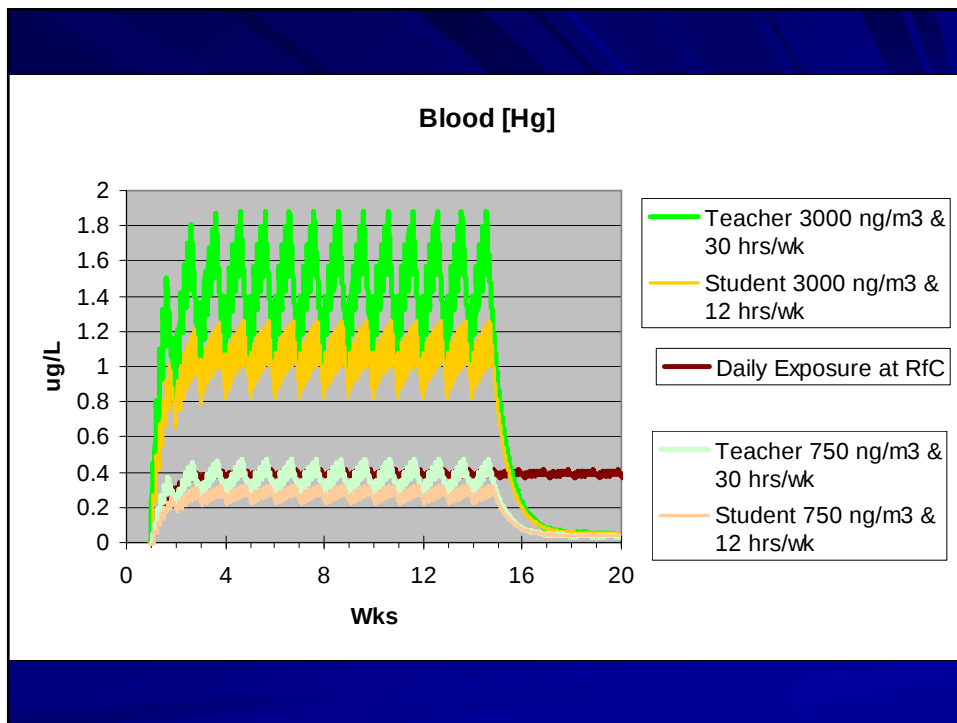
$300 \text{ ng/m}^3 * 14 / 5 = 840 \text{ ng/m}^3$

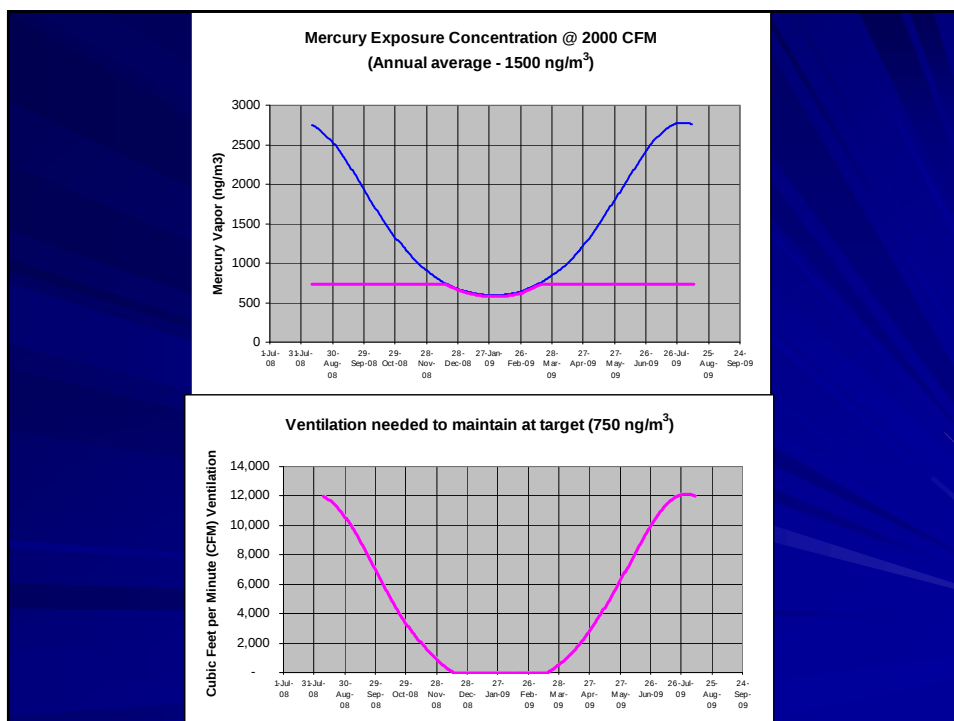
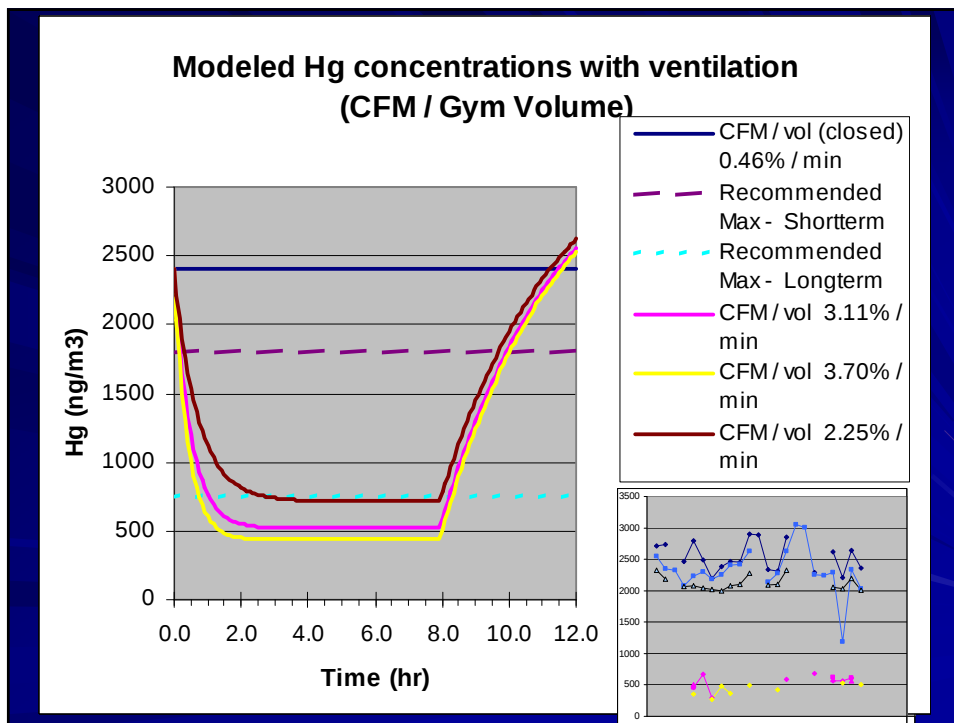
Teacher / Student Exposures

	Teacher	Student
Event Duration	6 hours	2 hours
Days per week	5 days	6 days
Ventilation Rate	1.2 m ³ / hr	1.9 m ³ / hr

Simplified inhalation model







Mitigation option = ventilate

<http://www.health.state.mn.us/divs/eh/hazardous/topics/mercury/hgvaporcalc.html>

Minnesota Department of Health
Protecting, promoting and improving the health of all Minnesotans

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Mercury Flooring Ventilation Calculator for Mercury Vapor Reduction

The calculator below will provide a rough estimate of A) the mercury vapor concentration in a gym under different ventilation and temperature conditions; B) the ventilation needed to attain a target mercury concentration in a school gym with a mercury-containing polymer floor. Enter gym and testing information into all yellow boxes, and the green boxes will show the estimated results. Please click on the "refresh calculations" button at the bottom if the input values are changed after the initial values have been entered. **Note: All the yellow boxes must have values before an estimate will be calculated.**

Outputs of this calculator are estimates from the best available model. However, results are only estimates. Mercury vapor testing needs to be conducted to determine the actual mercury vapor concentrations under any set of conditions in a gym with a mercury-containing floor. MDH makes no guarantee that the estimates produced by this calculator are suitable for any particular building.

MDH is interested in hearing about your experience using this calculator. Did the results of this calculator accurately predict mercury vapor testing results? Please provide us with feedback at: hazhealth@state.mn.us

Site Specific Gym Data

Gym Dimensions			Turnovers per hour
Length (ft)	Width (ft)	Height (ft)	

Test 1	Test 2
Mercury vapor concentration (nm/m ³)	Change in ventilation (CFM)
Floor temperature (F)	Mercury vapor concentration (nm/m ³)
	Floor temperature (F)

Solutions

Estimated Mercury Vapor Concentration	Estimated Ventilation
	Target

Needs

- How many floors?
 - Temporal variability?
 - What happens when covered?
-
- Disposal options?
 - Other uses?

