

IAQ: Its Not Rocket Science

Eric E. Dickson, CIEC
Industrial Hygienist
Educational Service District 101

Warning Signs – Often too late!



HVAC

Most Common Source of IAQ problems!

- # Lack of Outside Air / High CO2 levels
 - Failed equipment, energy reduction efforts
 - Residential-style thermostats
- # Reduced airflow
 - Dirty filters, blocked or diverted airflow
- # Intakes near system exhausts
- # Exhausts fans not operating

High CO2 = low outside air

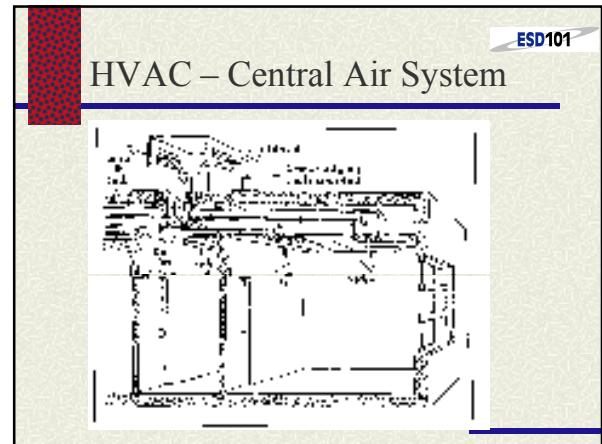


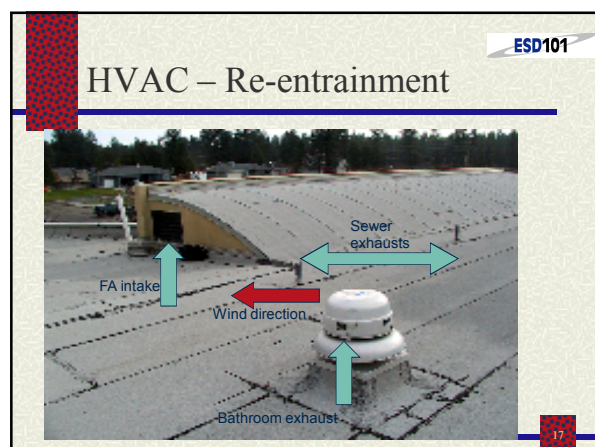
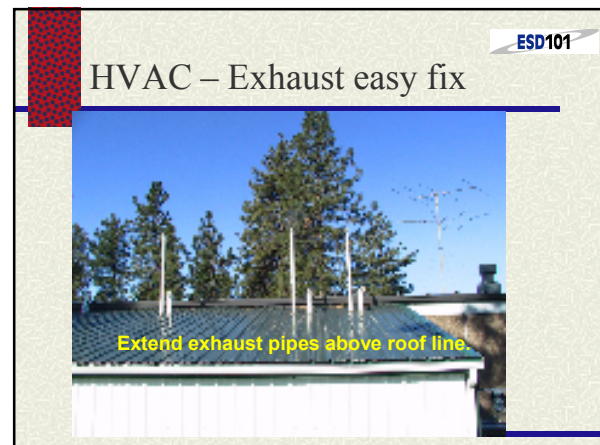
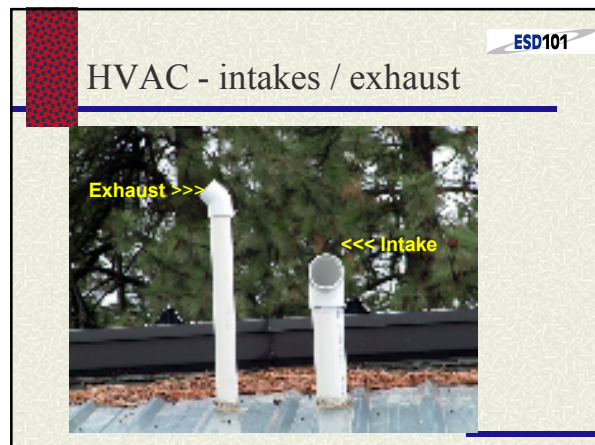
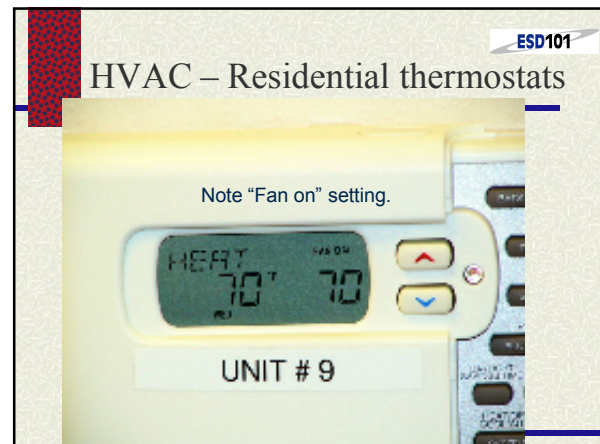
HVAC – Univent System



Blocked Univent









ESD101

Mold: Nothing New

- ⌘ Biblical Reference -
 - Leviticus 13:1-47 and 14:33-47
 - Priests would order the contaminated areas to be cleaned/removed or the house to be burned.
- ⌘ Mold contaminated food (ergot) believed partial cause of middle ages deformities and possibly Salem witch trials in 1692.
- ⌘ The “mummy’s curse” from molds in the tombs

ESD101

Mold – Outdoor Source

- ⌘ Mushrooms, fungus, decaying plants
- ⌘ Mold is everywhere!!!!!!

ESD101

Mold

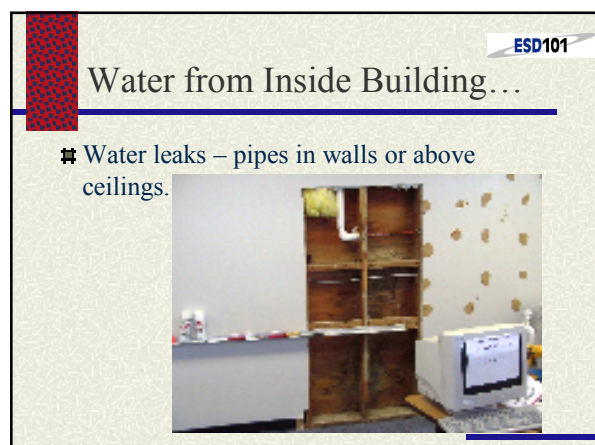
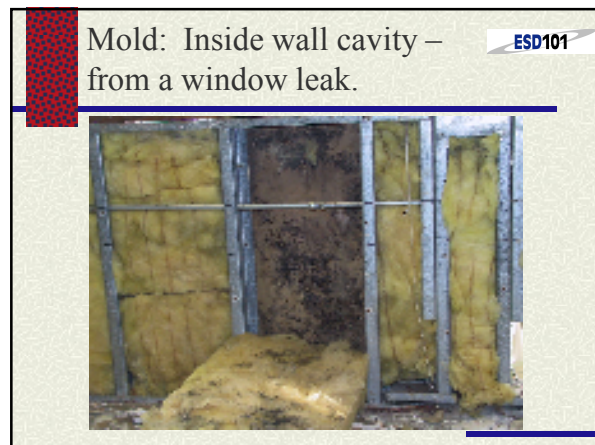
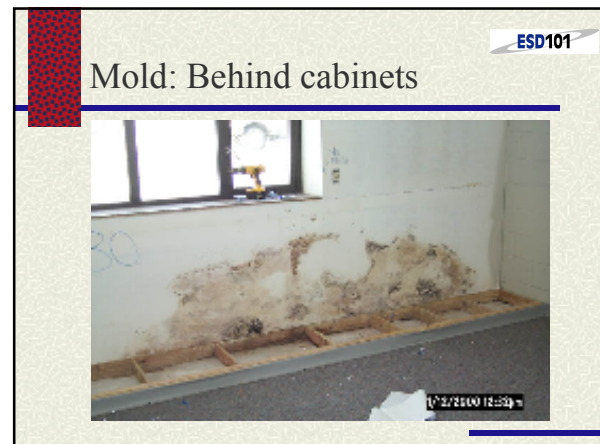
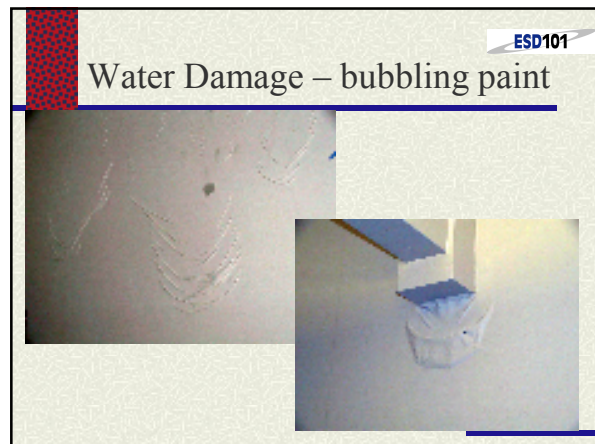
- ⌘ Water + sheetrock = Mold
- ⌘ Shut off water source
- ⌘ Dry out building materials within 48-72 hrs!
 - Cut/drill holes behind base cove material.
 - May be able to prevent mold growth.
- ⌘ Sheetrock is cheap!!
 - When in doubt, rip it out!

ESD101

Water from outside gets inside.

ESD101

Water Damage – water everywhere



Mold – Prevention

ESD101

- ⌘ Get airflow into wall cavity ASAP.



Animals

ESD101

- ⌘ Look for evidence of animal activity
 - Nesting
 - Fecal matter

Animals: birds

ESD101



Animals as Pets

ESD101



Animals: bird's nest in intake

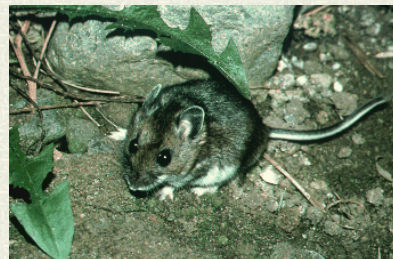
ESD101

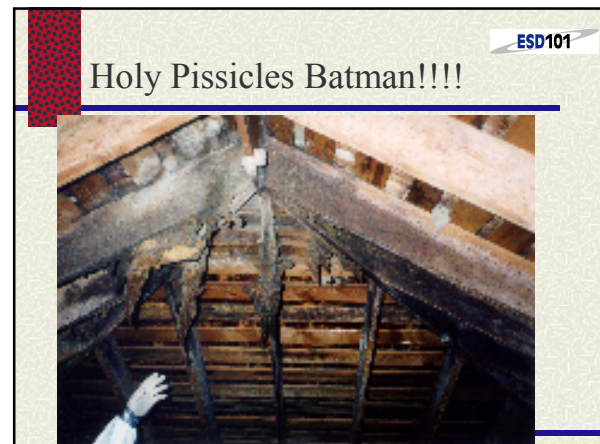


Animals – Rodents

ESD101

- ⌘ Remove access and food source!






ESD101

Airborne Particulates

Cleaning or repositioning dust?



ESD101


Airborne Particulates

Location	Date	Time	0.3-0.5 μm	0.5-0.7 μm	0.7-1.0 μm	1.0-2.0 μm	>2.0 μm	Humidity %	Temp °F	Liters
Rm 31 no kids	10/5/2004	9:37:01	45903	1972	571	474	477	103	68	36
Outside ambient	10/5/2004	9:47:05	63999	2336	606	430	410	93	59	41
Rm 31 w/ kids	10/5/2004	11:36:59	45455	2428	1118	1352	1568	457	69	37

ESD101

Ozone from Printers/Copiers

Self-contained printer ... not!



ESD101

Asthma Triggers

Cluttered room



ESD101

Asthma Triggers


Cozy Corner




ESD101

Others

- # VOCs (copiers, laminators, carpets, glues)
- # Perfumes / air fresheners
- # Formaldehyde (particle board furniture)
- # Cleaning chemicals (solvents, carpet cleaning, etc.)



Questions?????????



Eric E. Dickson, CIEC
Educational Service District 101
Spokane, WA
(509) 789-3518
edickson@esd101.net
