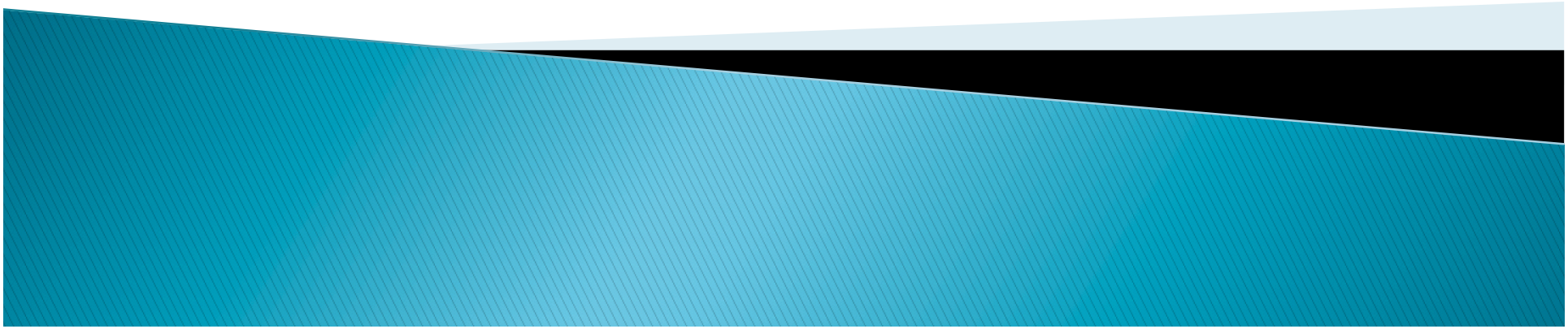
Indoor Environmental Quality



Why is IAQ a Union Issue?

- Nearly 53 million children and 2 million adults spend their day in schools and 50% of those schools have IAQ problems
- No federal laws or regulations exist to force IAQ improvement
- Poor indoor air quality affects learning and causes physical health symptoms

School Environments are Unique

- Schools and colleges are complex environments.
- Both the building and activities inside and outside the building have the potential for many indoor air concerns.

IAQ & Learning

- Children in sick buildings show clear signs of sensory irritation, skin rashes, and mental fatigue
- Poor IAQ reduces the productivity of teachers and staff due to discomfort, sickness, or absenteeism
- Can lead to a prevalence of asthma

Asthma: Effect on Staff

- Has reached epidemic proportions

- School staff disproportionately affected
  - Research shows teachers are more likely to develop asthma then the general population & many other occupations

  - Female teachers are at increased risk of exposure

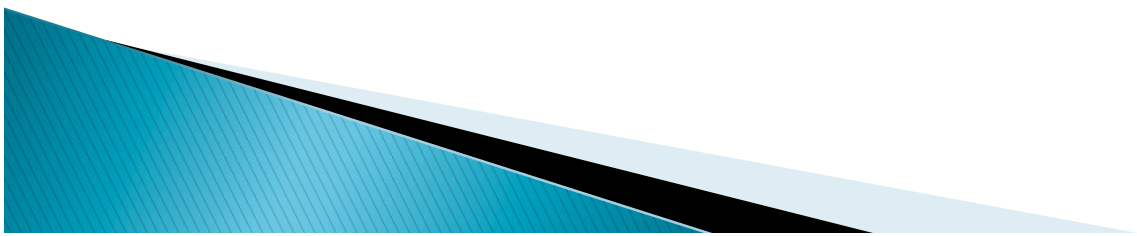
Exposure to indoor allergens & irritants may play a significant role in triggering asthma episodes.

Asthma Hurts Children

- Leading chronic illness
  - 1 in 13 school-aged children have asthma
  - Incidents of acute attacks have doubled in the past 10 years
- Leading cause of absenteeism
  - blamed for 14 million missed school days

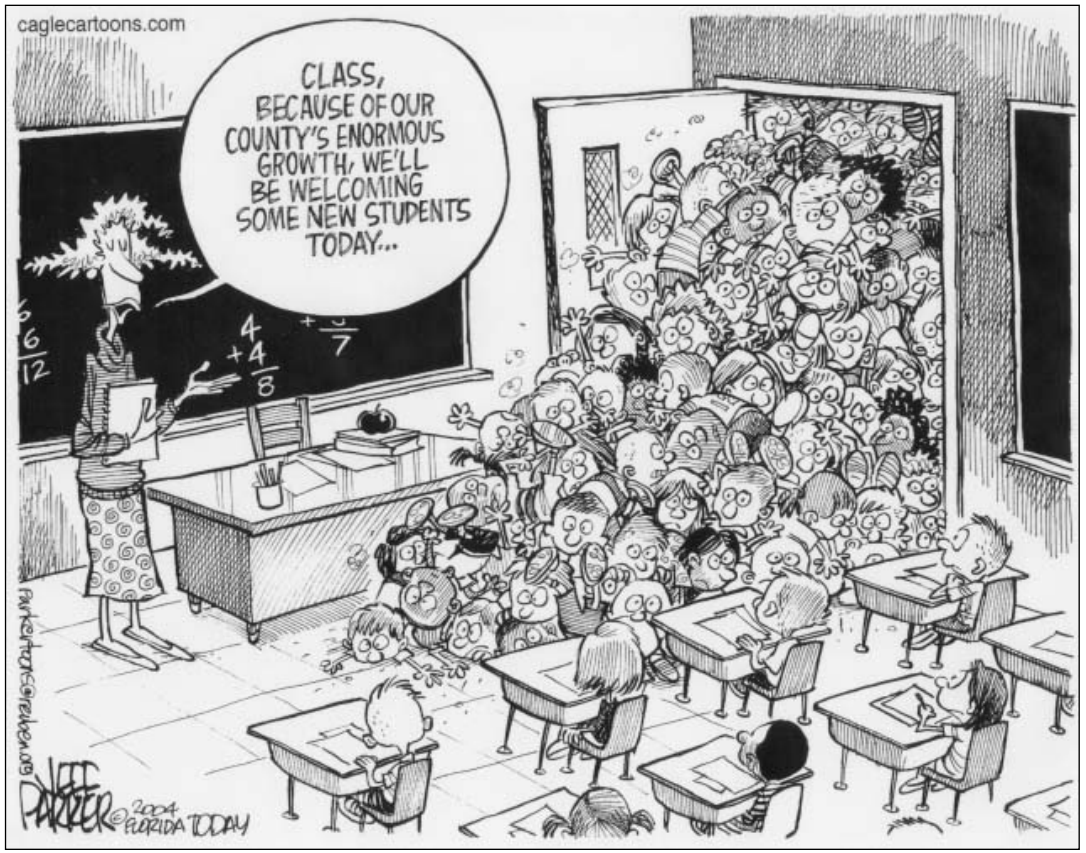
Occupant Issues

- Children
- Elderly
- Allergic persons
- People with respiratory disease
- Asthmatics
- Other diseases



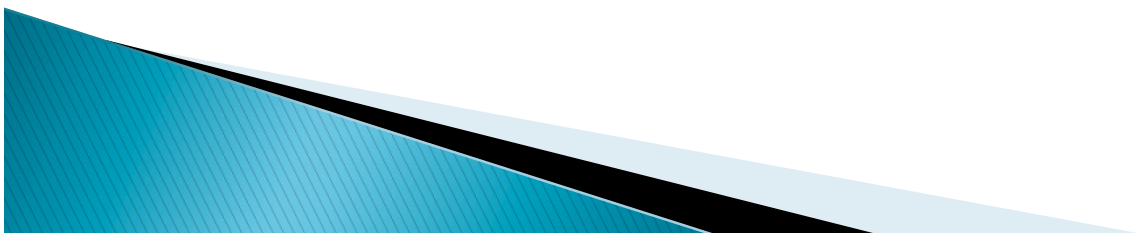
What contributes to a sick building?

- Poor general ventilation
  - lack of fresh air
  - ventilation system not working right
- Deferred maintenance
  - thermostat malfunctions
- Over-crowded facilities



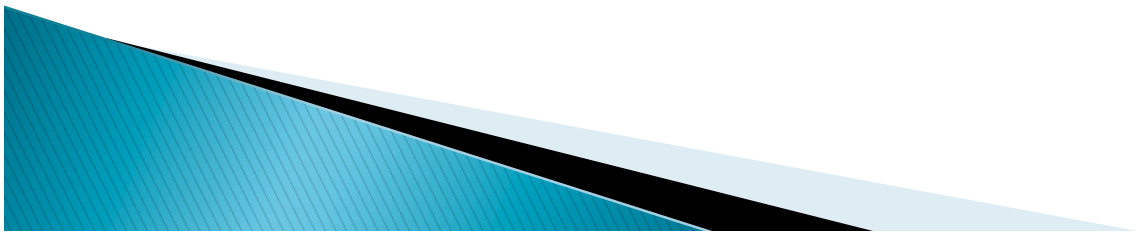
Evaluating IAQ – A Building Dynamic Approach

- No regulatory standards
- Instead of measuring specific pollutants look at
  - Potential sources
  - Occupancy
  - Activities
  - Ventilation system



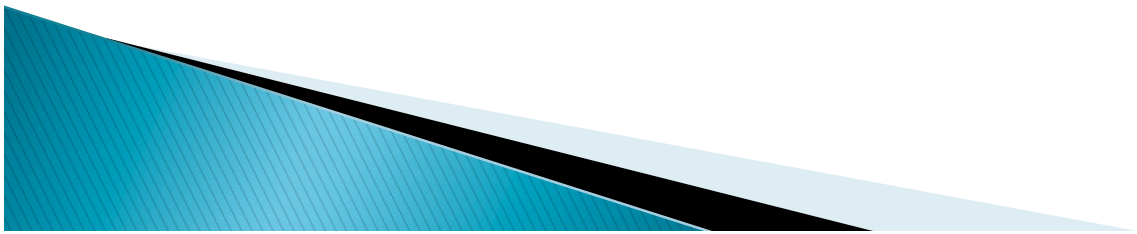
Indoor Sources

- HVAC
- Emissions from office equipment
- Supplies/chemicals
- Shops, labs, cleaning processes
- Bathrooms
- Mechanical systems
- Building materials
- Combustion – boilers, gas heaters



Indoor Sources Cont'd

- Maintenance activities
- Housekeeping activities
- Occupants – smoking, cooking, body odor, perfumes/fragrances
- Construction/Renovations
- Episodes – fire, spills, floods
- Pesticide application
- Dry traps



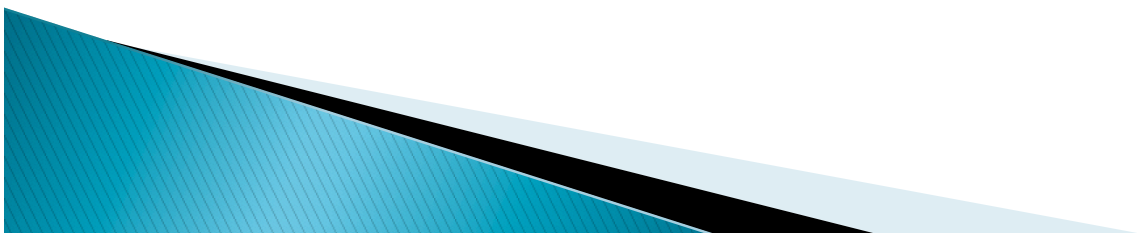
And there's….

Water

When mold becomes a problem

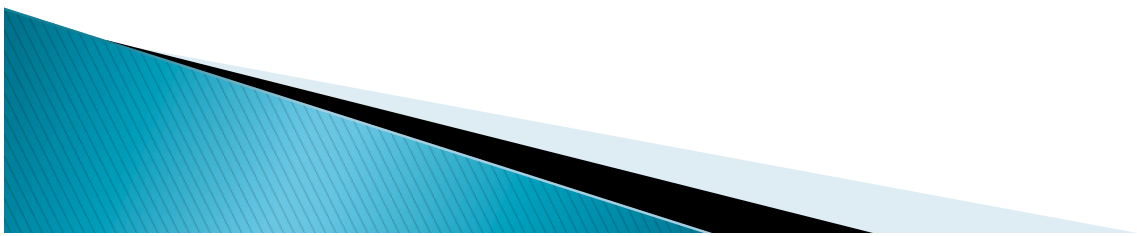
Mold is everywhere, *however*

Mold becomes a problem when molds are “amplified”, or exotic species grow inside



Mold – Dead or Alive

- Dead mold and spores can still cause allergies
- When mold concentrations inside are greater than outside: problem
- **symptoms can occur even when mold counts are low**



Finding Mold Indoors

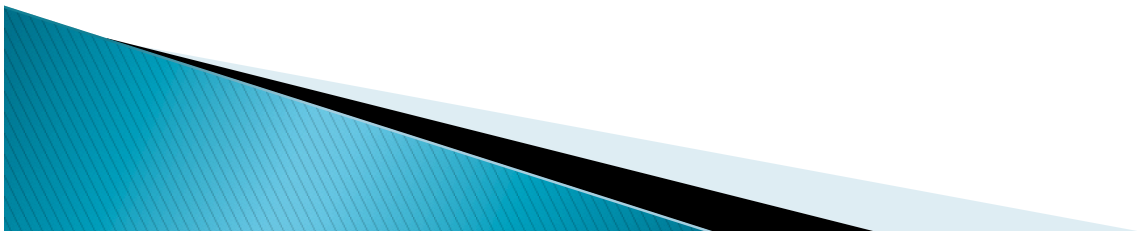
To have mold, you need moisture!

- *Moisture can come from:*
- Condensation – vapor barrier, insulation
- Elevated relative humidity >60 %
- Roof or wall leaks
- Air conditioning drip pans
- Crawl spaces – ground water
- Pipe leaks

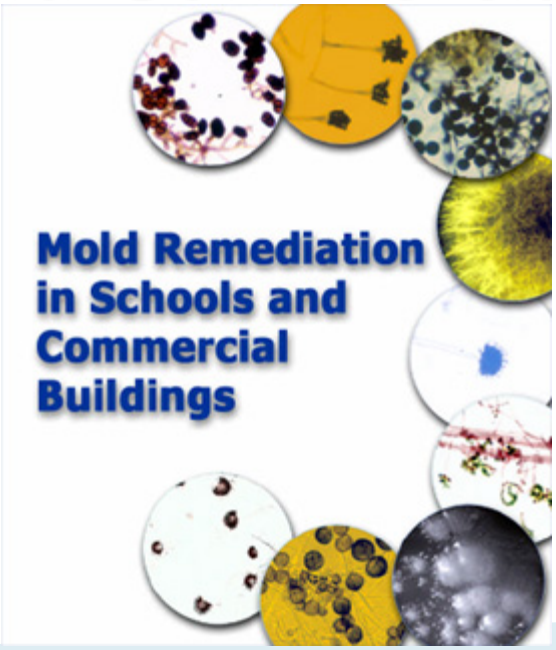
You don't need to know what kind of mold it is … you just need to get rid of it!

Preventing Mold Problems

- Stop moisture sources
- Keep roofs clean of leaves/debris; make sure drained properly
- Use effective, washable mats and runners by doors to reduce water from shoes
- Use dehumidifiers, moisture barriers, etc.
- Keep debris away from building/air intakes
- Keep paper, cardboard, etc dry



Best Mold Resource: EPA's "Mold Remediation in Schools and Commercial Buildings"



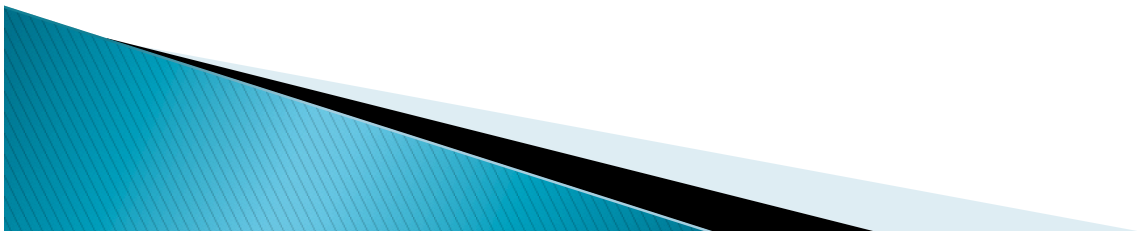
http://www.epa.gov/mold/index.html

Measuring specific air pollutants

- Not done unless a good reason to measure
- Volatile Organic Compounds (VOCs)
- CO2, Temp and Humdity
- Fungi and bacteria
- Formaldehyde
- Pesticides
- Dusts or particulate matter

Problems with air samples

- Snap shot in time
- No IAQ standards
- Vary over time
  - Weather – wind direction
  - Ventilation Outdoor Air dampers vary
  - Ventilation systems vary
  - Source varies – carpet, loading dock, garbage dumpster, cleaning schedule, pressure changes



How should an expert look at this problem?

- Interview/survey occupants
- Conduct a walk-around
- Look at all components of the ventilation system-central and unit ventilators
- Take simple measurements – temperature, humidity and carbon dioxide measurements

Construction and Renovation

Construction and Renovation

- Construction, demolition, and renovation work is disruptive, dusty, noisy, and potentially dangerous.
- School construction: need strong measures to keep students and staff safe and not disrupt learning environments.

Is This Your Child?

11 Parents

Typical Chemical Sensitivity or
"Sick-Building Syndrome" Symptoms

	BEFORE	DURING & AFTER	
Headaches **Lethargy** **Dizziness**	0	3 3-4 4	9 Boys
Malaise **Weakness** **Nausea**		3 2 2	
Flushing **Eye itch or irritation** **Dry eyes**		0 1 1	5 Girls
Blurred vision **Stuffy or watery nose** **Dry throat**	0 2 0	1 1 1	
Arthralgia or joint pain **Skin problems** **Cough and asthma**	0 1 1	0 1 1	
Numbness and tingling **Muscle weakness** **Muscle cramps**	0	1 1-2 2	
Weight loss & Loss of appetite **Insomnia** **Confusion** **Loss of memory**		1-2 1 0 0	
Poor concentration **Edema** **Moodiness**		1 0 1-2	
Depression **Fatigue** **Increased perspiration** **Hyperactivity**		0 0 0 0	
Loss of voice or laryngitis **Hearing loss** **Irregular heartbeat**		3 0 0	

Construction and Renovation Hazards

- Dust and other particulates
- Asbestos, Lead, PCBs
- Vapors from paints, sealers, glues, varnishes, urethanes and roofing materials
- Vapors from new furnishings and building materials (carpeting, particleboard, plastics)
- Diesel exhaust, carbon monoxide
- Storage of equipment, debris
- Changes in emergency exiting
- Noise

Elements of a Good Construction and Renovation Policy

- Pre-Construction Planning
- Communications
- Complaint Procedures
- Bidding Procedures
- Third Party Commissioning
- Post-Construction Planning

Facility Maintenance Considerations:

Let's give them a break

Protecting Staff from Communicable Exposures at School

American Federation of Teachers

This material was produced under grant number 46C0-HT02 from the Occupational Safety and Health Administration, U.S. Department of Labor. These materials do not necessarily reflect views or policies of the U.S. Department of Labor, nor does mention of any trade names, commercial products, or organizations imply endorsement by the U.S. Government.

Who Are Most Vulnerable?

Staff with:

- Chronic respiratory illnesses
- Chronic heart disease
- Cancer
- Diabetes
- Organ transplants

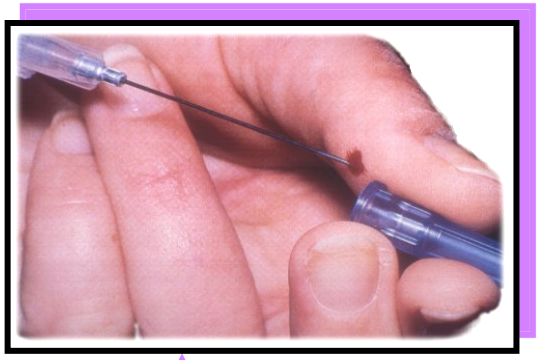
AND pregnant women (their fetuses or unborn children)

Exposure Through the Air

When you sneeze, germs are expelled at about 100 mph, so it's always a good idea to cover your mouth and to stay away from anyone who's sneezing.

Exposure Through Infected Blood and Body Fluid

The risk of transmission for blood-borne microbes or pathogens at school is not zero but it is very low



A very deep bite that draws blood from a student infected with

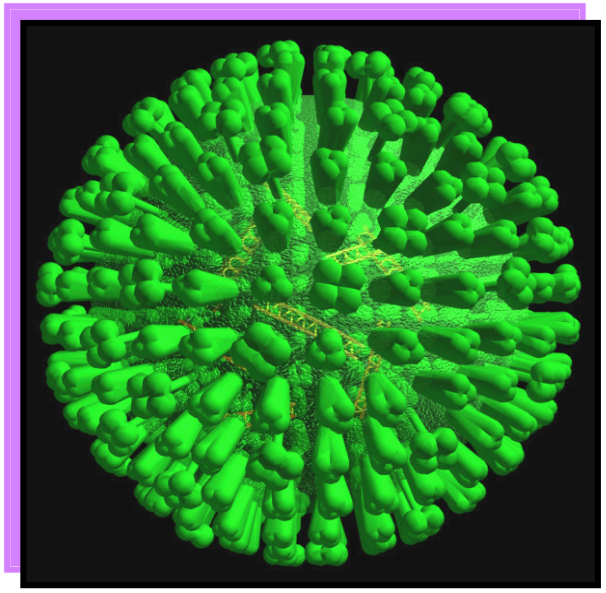
A deep puncture wound from a contaminated needle recently used by an infected

Exposure Through Skin & Object Contact

Microbes can sometimes spread through touching infectious materials

Influenza

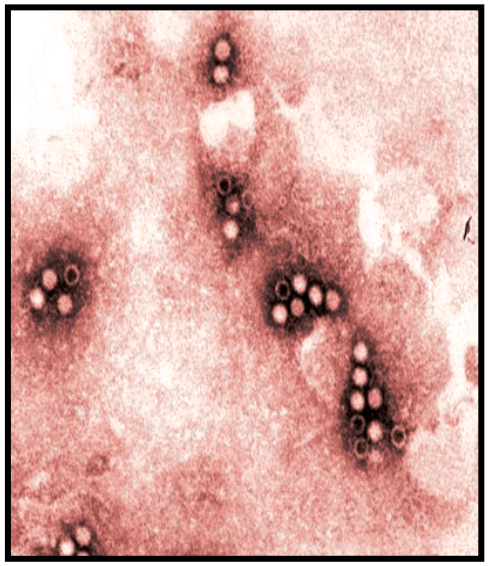
People can transmit influenza virus up to **5 days** before symptoms occur.



- Airborne droplets are the primary route of transmission.
- The virus can persist for hours in the air.

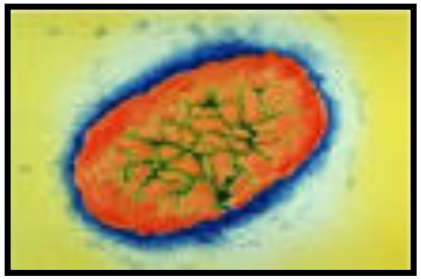
Fifth Disease

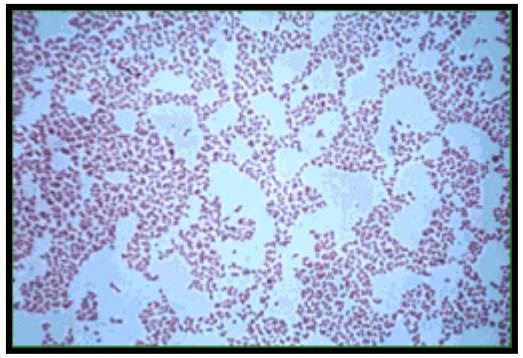
Children are most infectious before the rash appears



A newly infected mother whose fetus becomes infected may develop anemia and a swelling of the fetus leading to many organ complications

Whooping Cough

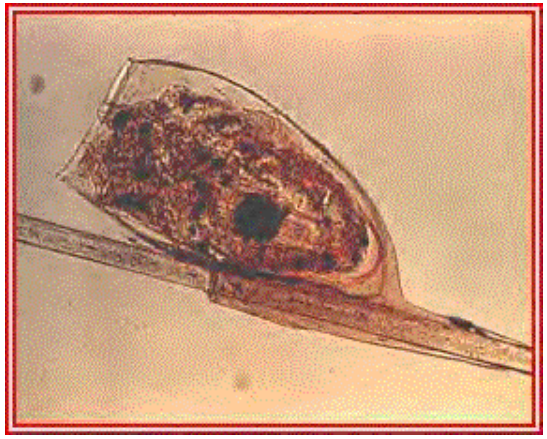




- Caused by a bacteria
- Infected persons are highly contagious before coughing starts
- There is no treatment to help reduce the severity of the coughing

Pediculosis – Lice

Spread by direct contact with infected person or with the objects they use



Larvae attached to hair shaft

Adult Louse

CA-MRSA: Community Associated Methicillin Resistant Staphylococcus Aureus

- bacteria commonly found on the skin or in the nose of healthy people,
- approximately 25 to 30 percent of us are colonized with staph bacteria without becoming ill
- treatment of some staph infections has become more difficult, they have become resistant to various antibiotics

Transmission

- Direct skin to skin contact
- Sharing contaminated personal items (e.g., body towels, razors, soap)
- Poor personal hygiene
- Directed contact with contaminated environmental surfaces
- Living in crowded conditions

Prevention: Vaccination

Most school staff need at a minimum:

- A booster tetanus and diphtheria every 10 years
- Chicken pox vaccination
- Hepatitis B vaccination
- Influenza or flu vaccination every year

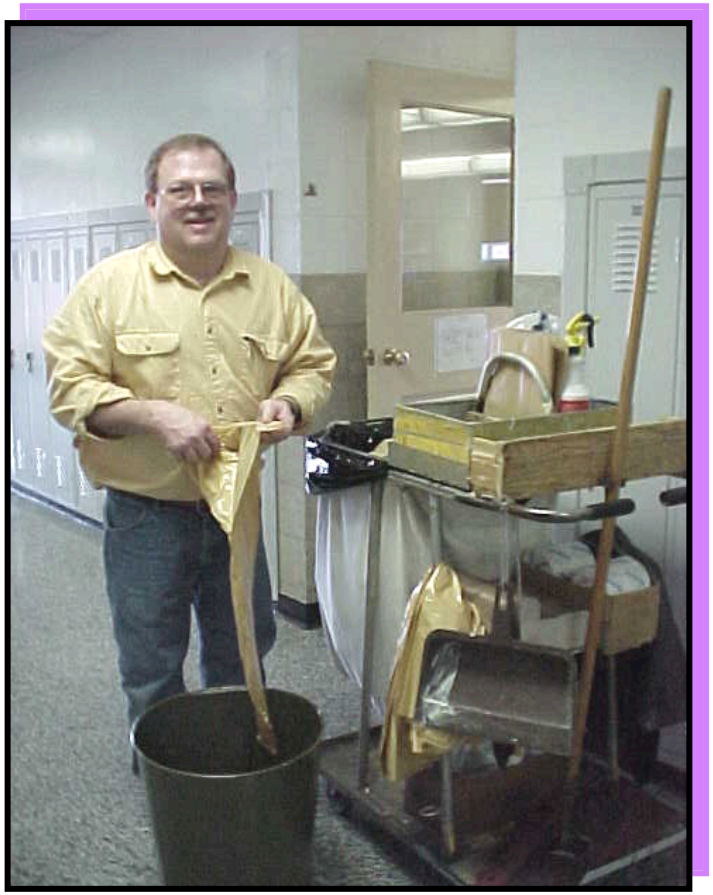
Hand Sanitation

Hand-washing is one of the most effective ways to prevent disease transmission

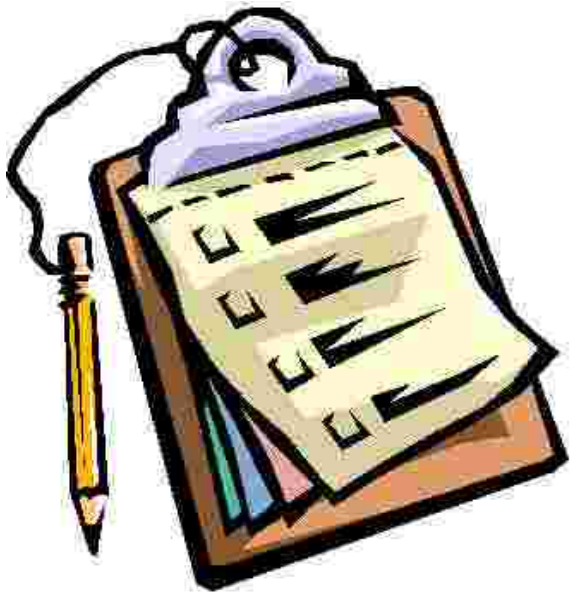
Alcohol gel hand sanitizer is effective in killing most germs

Prevention: Custodial Cleaning

- The custodial staff in your school plays an important role by cleaning and killing germs.
- Changing tables should be cleaned with a solution of water and bleach.



Universal Precautions Experts' List for Bloodborne Exposures



Assume Everyone Is Infected

- Use barriers between you and a person's blood/body fluids
- Wear gloves when coming into contact with blood/body fluids
- Wash hands after removing gloves
- When exposure can't be prevented – wash all exposed skin
- Use disinfectants to clean all spills
- Place used sharps (needles/lancets) in a puncture proof container

Communicable Disease Policies for Schools

- Training for staff
- A reporting & communication system to report communicable diseases
- Immunizations free of charge
- Medical removal of a staff person who may be at risk
- Special counseling to staff at special risk
- Supplies of alcohol gel hand sanitizer & opportunities to wash hands
- A written exposure control plan

Protections at Work

OSHA Recommends that Employers Encourage Staff to:

- **Stay at home when sick.**
- Wash their hands frequently with soap and water or hand sanitizer if no soap or water available.
- Avoid touching noses, mouths, and eyes.
- Cover coughs and sneezes with tissue, or cough and sneeze into their upper sleeves if tissues not available.
- Practice social distancing by maintaining separation of at least 6 feet from other staff, students and the public.

Ergonomics: NYSUT Survey

1. First of all, I would like you to select, from the list I am going to read, the job title that best describes your job:

Q1

	Frequency	Percent
bus drv	73	7.4
cust, mntnc, grnd wrkr	49	5.0
food serv	52	5.3
hlth serv	24	2.4
sec, clrcl	91	9.3
ta, mntr	130	13.3
ta	144	14.7
other	328	33.5

2a. With very young children (kindergarten or younger)?

Q2A

	Frequency	Percent
yes	304	31.0
no	587	59.9

Q2B

	Frequency	Percent
yes	781	79.7
no	110	11.2

2c. With medically fragile students?

Q2C

	Frequency	Percent
yes	487	49.7
no	404	41.2

2d. With physically aggressive students?

Q2D

	Frequency	Percent
yes	681	69.5
no	210	21.4

5. How frequently does this pain or discomfort occur?

Q5

	Frequency	Percent
daily	305	31.1
not dly, more than 1 per wk	264	26.9
more than 1 per mo	141	14.4
less than 1 per mo	181	18.5

6. What activities do you perform on your job that cause this pain or discomfort?

Q6

	Frequency
rstrng studnts	288
lft, hndlng, dsabld	164
lft, hndlng, yng chldrn	135
lft, hndlng, mtrls	118
typ, comp wrk	94
tlphn, desk wrk	27
flng	18
oprt mchnry	48
drv vehcle	52

Ergonomics

For School Employees

This material was produced under grant number 46C0-HT02 from the Occupational Safety and Health Administration, U.S. Department of Labor. These materials do not necessarily reflect views or policies of the U.S. Department of Labor, nor does mention of any trade names, commercial products, or organizations imply endorsement by the U.S. Government.

What Is Ergonomics

"The Laws of Work Design"

Design the Job to fit the Worker,

Don't

Force the Worker to fit the Job

Your Workplace Risk Factors

Using Force

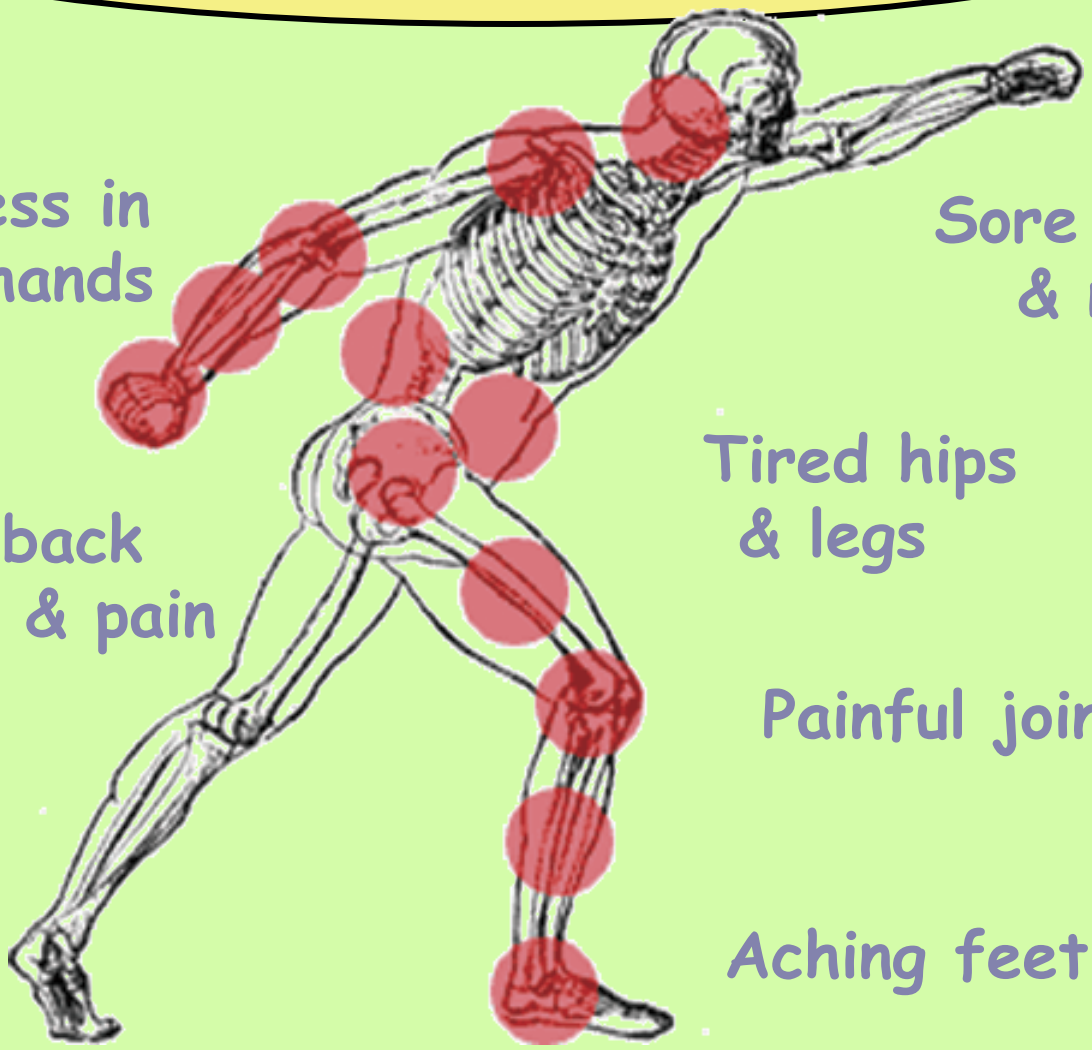
Standing for Long Periods of Time

Pushing & Pulling

Warning Signs & Symptoms

- Chronic lower back pain
- Self-massaging neck, hands & forearms
- Fear of dropping pots & bottles
- Hands that fall asleep frequently
- Difficulty opening jars or pouring from gallon containers
- Shooting pain down arm that wakes you at night

Repetitive Strain Injuries



Numbness in arms & hands

Sore shoulder & neck

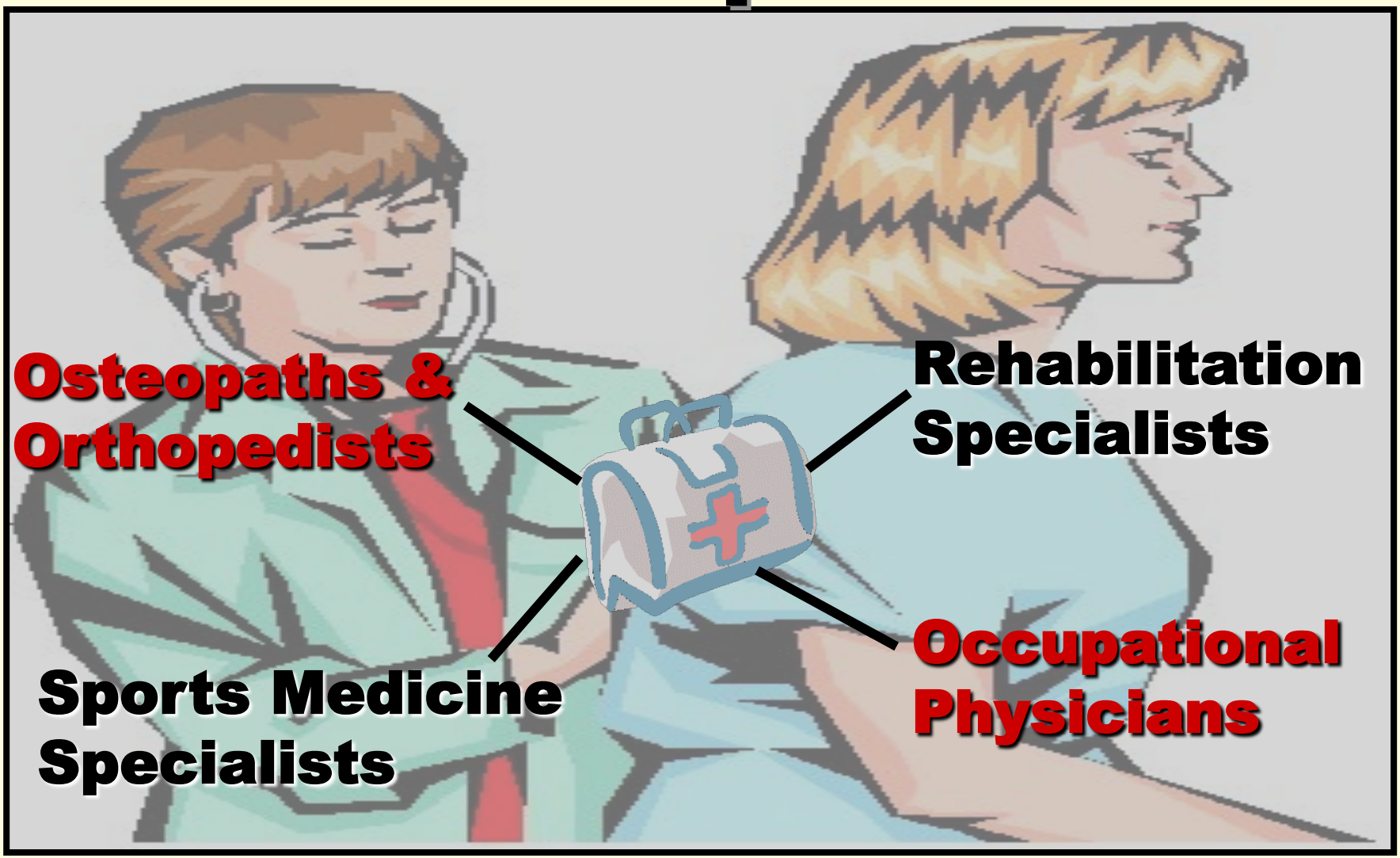
Tired hips & legs

Lower back stiffness & pain

Painful joints

Aching feet

Seek Out Specialists



PREVENTION GOALS for Computer Work

Keyboard & Mouse Trays Can be Retrofitted to Existing Furniture

Wrist Rest Keeps Pressure Off Your Wrists


HEALTH & SAFETY
aft
TRAINER


1.


2.


3.


4.


CAUTION
5.


6.

Stockroom

- Mechanical lifts
- Conveyors and carts
- Step ladder with non-skid feet
- Storing heavier items on shelves that are within a comfortable reach

Cooking & Baking Area

- Height friendly ovens & steamers
- Carts at rack level for transferring

Washing Area

- Automatic pot-washer

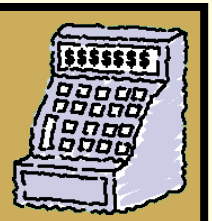
Prep Area

- Ergonomic knives & scoops
- Height-adjustable work surfaces
- Foot rests
- Mechanical aids for chopping, dicing or mixing foods

Serving Line

- Foot rests
- Anti-fatigue matting
- Food carts with large wheels

Cashier



Good Practices For Standing

- In the classroom – alternating between standing and sitting throughout the day
- In the kitchen - Anti-fatigue matting for the kitchen floors
  - To reduce the pain & discomfort of standing
  - To lower the chance of slips & falls
- Foot rests could also be provided for standing
- YOU can help by:
  - Wearing shoes with lace-up fastenings:
    - Tighten the lace at the instep of footwear
    - Use padding under the tongue & a shock absorbing cushioned insole
  - Not wearing flats or heels higher than 2”

Solutions for Everyday Classroom Ergonomics

Working With Special Needs Children

WHY SO MANY MEDICALLY FRAGILE CHILDREN?

- Drug and alcohol abuse cause physical and mental abnormalities
- HIV Positive/AIDS
- Higher survival rates due to advances in medical technology
- Decreased number "hospital" schools
- No insurance coverage

CONCERNS

- Adequate facilities
- Medical procedures
- Job descriptions
- Training
- Liability
- Supervision
- Cleanliness
- Sanitation
- Legality
- Substitutes
- Privacy
- Confidentiality
- Safety
- Funding
- Crisis management

TASKS NEEDED DURING DAY

- Toileting
- Feeding/snacks
- Hygiene
- Transfers
- 1:1 academics
- Vital signs
- Intake & Output
- Medications
- Diapering
- Suctioning
- Oxygen
- Nap Supervision
- Gait assistance
- Positioning

SAFETY AND HEALTH CONCERNS

- Blood exposure
- Exposure to bacteria/viruses
- Ergonomic injury in tasks (transferring, toileting) assisting without training or appropriate assistive devices.
- Stress due to injury or illness of student as result of improper care

PARAPROFESSIONAL - DUTIES INCLUDE

- Oral hygiene or nail, hair and or skin care
- Preparing nourishment
- Feeding students orally as long as there are no feeding issues
- Care of an incontinent student
- Assistance with bedpan or urinal
- Non-medical aspects of bowel & bladder training.
- Assistance with clothing

Tasks that need training, assessment, and approval by a Registered Professional Nurse

- Clean dressings
- Vital Signs
- Observation of drip gastrostomy feeding
- Stopping drip feeding when ended (no flushing required)
- Intake & Output measurement
- Assisting self-directed students with medications.
- External catheter care
- External care of indwelling catheter

“IF YOU THINK YOU’RE TOO SMALL TO MAKE A DIFFERENCE, YOU’VE NEVER BEEN IN BED WITH A MOSQUITO”