

# Health & Safety Training



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## Office Employees

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May, 2014

Office of Occupational Safety and Health

# Right-to-Know/Hazard Communication

## Agenda

- Regulations
- Log and Summary of Occupational Safety and Health Injuries & Illnesses (SH 900 forms)
- Toxicology
- Labels and Safety Data Sheets
- Common Workplace Chemicals
- Physical Hazards

# Course Objectives

Upon completion of this training, employees should:

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- |  |   |
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| <ul style="list-style-type: none"><li>➤ Be knowledgeable of the requirements of the Hazard Communication Standard 2012 and Right-To-Know Law</li><li>➤ Know which agency enforces the safety and health regulations</li><li>➤ Understand how to obtain a copy of the written Hazard Communication Plan</li></ul> | <ul style="list-style-type: none"><li>➤ Be able to understand the label requirements</li><li>➤ Know what a safety data sheet (formerly MSDS) is, and how to obtain one</li><li>➤ Understand the basics of how chemicals can impact the body</li><li>➤ Have an increased awareness of Common Workplace Chemicals</li></ul> |
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# CLASSIFICATION OF HAZARDS

# What is an Occupational Hazard?

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An Occupational Hazard can simply be defined as any substance, material, process, or practice that has the ability to cause harm or adverse health effect to a person in the workplace.

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# Classification of Hazards

<b>BIOLOGICAL</b>	<ul style="list-style-type: none"><li>• viruses, parasite, bacteria, food, fungi, and mold</li></ul>
<b>CHEMICAL</b>	<ul style="list-style-type: none"><li>• depends on the physical, chemical and toxic properties of the chemical</li></ul>
<b>ERGONOMIC</b>	<ul style="list-style-type: none"><li>• poor lighting, poor posture, repetitive movements, improper set up of workstation</li></ul>
<b>PHYSICAL</b>	<ul style="list-style-type: none"><li>• magnetic fields, pressure extremes (high pressure or vacuum), noise</li></ul>
<b>PSYCHOSOCIAL</b>	<ul style="list-style-type: none"><li>• stress, violence</li></ul>
<b>SAFETY</b>	<ul style="list-style-type: none"><li>• slipping/tripping hazards, inappropriate machine guarding, equipment malfunctions or breakdowns</li></ul>
<b>RADIATION</b>	<ul style="list-style-type: none"><li>• ionizing and Non-ionizing</li></ul>



# REGULATIONS

# Regulatory Agencies

**OSHA** - *Occupational Safety and Health Administration* - 1970

- Protects Private Employees
- A Federal Agency
- **Goal** – to insure worker safety and health in the US by working with employers to create better working environments

**PESH** – *Public Employee Safety and Health Bureau* - 1980

- Protects Public Employees
- A State Agency - NYS Department of Labor
- **Goal** – Oversees workplace protection of public employees at NYS and NYC levels. Enforces OSHA standards

# Two Laws Apply to DOE Employees

These laws were passed in the mid 1980's



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Employers are required to make sure that employees:

- understand the potential chemical hazards they may be exposed to on the job
  - know how to protect themselves against these hazards.
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# Coverage of Right-to-Know Law

## GENERAL DUTY CLAUSE

Employers must furnish employees a workplace free from recognized hazards and in compliance with the safety and health standards applicable to the employer's workplaces and other regulations issued by the Commissioner of Labor under the Act.

*EG. Physical and Safety Hazards*

## RTK Covers:

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- All hazardous substances
  - Infectious diseases
  - Radiation
  - Full time employees
  - Part time employees
  - Provisional employees
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## RTK Does Not Cover:

- Physical hazards (e.g. noise)
- Safety Hazards (e.g. electrical)



# PUBLIC EMPLOYEE RIGHTS

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## **PUBLIC EMPLOYEE RIGHTS**

Be notified about their rights under the law

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Use their rights under the law without retaliation and discrimination

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Receive information and training about workplace hazards and methods to prevent harm

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Get results of any test results done to find hazards in the workplace

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Review records of work-related injuries and illnesses

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Access their own medical records or group results of medical screening conducted by the employer

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Ask PESH to inspect their workplace

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Refuse to work with a chemical if information is not provided within 72 hours of request

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# Notification Posters

## NYS RIGHT TO KNOW POSTER



## NYS PUBLIC EMPLOYEE SAFETY AND HEALTH POSTER



# Training

Employees must be trained on job related health hazards and methods to protect themselves upon:

- Initial hire
- Annually
- When new hazards are introduced

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## TRAINING TO INCLUDE:

The chemical substances found in the work place

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The potential for occupational exposure

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The hazards associated with these substances

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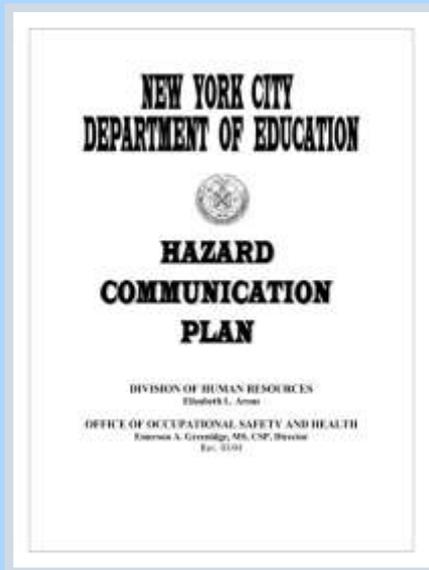
The health risks associated with these exposures

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Methods to control over-exposures

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# Written Hazard Communication Program



Employees can ask to see  
the plan at any time

Employer must prepare a written program outlining how the requirements of the law will be fulfilled.

The plan can be accessed at:  
[www.schools.nyc.gov/offices/DHR/OSH](http://www.schools.nyc.gov/offices/DHR/OSH)

# Work Related Injuries & Illnesses

## RECORDABLE INJURIES

- Injuries requiring more than first aid
- Lost of work days
- Job transfer
- Restriction of duty
- Unconsciousness
- Injuries resulting in death



The employer must keep a record of recordable occupational injuries and illnesses.

- SH 900 – Log of Work Related Injuries and Illnesses
- SH 900.1 – Summary of Work-Related Injuries and Illnesses
  - Post from February 1<sup>st</sup> – April 30th
- SH 900.2 – Injury and Illness Report

# SH900.2 – Injury and Illness Incident Report

## NEW YORK STATE DEPARTMENT OF LABOR INJURY AND ILLNESS INCIDENT REPORT FORM SH 900.2

Attention: This form contains information relating to employee health and must be used in a manner that protects the confidentiality of employees to the extent possible while the information is being used for occupational safety and health purposes.

This *Job Injury and Illness Incident Report* is one of the five forms you must fill out when a recordable work-related injury or illness has occurred. Together with the *Log of Work-Related Injuries and Illnesses* and the accompanying *Summary*, these forms help the employer and PESH develop a picture of the onset and severity of work-related incidents.

Within 7 calendar days after you receive information that a recordable work-related injury or illness has occurred, you must fill out this form or an equivalent. Some state worker's compensation, insurance, or other reports may be acceptable substitutes. To be considered an equivalent form, any substitute must contain all the information asked for on this form. According to 12 NYCRR Part 801, PESH record keeping rule, you must keep this form on file for 5 years following the year to which it pertains.

If you need additional copies of this form, you may photocopy and use as many as you need.

Completed by: \_\_\_\_\_  
Title: \_\_\_\_\_  
Phone: (\_\_\_\_) \_\_\_\_\_ Date: \_\_\_\_\_

### Employee Information:

- 1) Full Name: \_\_\_\_\_
- 2) Street: \_\_\_\_\_  
City: \_\_\_\_\_ State: \_\_\_\_ Zip: \_\_\_\_\_
- 3) Date of Birth: \_\_\_\_\_ (4) Date hired: \_\_\_\_/\_\_\_\_/\_\_\_\_
- 5)  Male  Female

- 14) What was the employee doing just before the incident occurred? Describe the activity, as well as the tools, equipment, or material the employee was using. Be specific. Example: "climbing a ladder while carrying roofing materials", "spraying chlorine from hand sprayer".
- 15) What happened? Tell us how the injury occurred. Example: "When ladder slipped on wet floor, worker fell 20 feet", "Worker was sprayed with chlorine when gallon broke during replacement."
- 16) What was the injury or illness? Tell us the part of the body that was affected and how it was affected; be more specific than "hurt", "pain", or "sore." Example: "muscle back", "chemical burn, hand."
- 17) What object or substance directly harmed the employee? Example: "concrete floor", "radial arm saw", "chlorine."
- 18) If the employee died, when did death occur? Date of death: \_\_\_\_\_

ILLNESS CASES ONLY  Check this box if the employer independently and voluntarily reports that his/her name not be entered on the log. If checked, treat as a privacy concern case.

SH 900.2 (1-05)

### Physician Health Care Professional Information

- 6) Name of physician or other health care professional: \_\_\_\_\_  
\_\_\_\_\_
- 7) If treatment was given away from the workplace, where was it given?  
Facility: \_\_\_\_\_  
Street: \_\_\_\_\_  
City: \_\_\_\_\_ State: \_\_\_\_ Zip: \_\_\_\_\_
- 8) Was employee treated in an emergency room?  
 Yes  No
- 9) Was employee hospitalized overnight?  
 Yes  No

### Information about the case:

- 10) Case number from the Log: \_\_\_\_\_  
(Transfer the case number from the Log after you record the case.)
  - 11) Date of injury or illness: \_\_\_\_/\_\_\_\_/\_\_\_\_
  - 12) Time employee began work: \_\_\_\_\_ AM / PM
  - 13) Time of event: \_\_\_\_\_ AM / PM  
 Check if time cannot be determined
- Event occurred  before  during  after work shift



# SH900.1 – Summary of Work- Related Injuries and Illnesses

Posted from:  
February 1st – April 30th

STATE OF NEW YORK  
DEPARTMENT OF LABOR



Division of Safety and Health  
Public Employee Safety and Health  
State Office Campus  
Building 12, Room 158  
Albany, NY 12240

## SUMMARY OF WORK-RELATED INJURIES AND ILLNESSES FORM SH-900.1

All establishments covered by PART 801 must complete this summary annually, even if no occupational injuries or illnesses occurred during the year.

Employees, former employees, and their representatives have the right to review this form. They also have limited access to the Log (SH900) or its equivalent. See 801.35 and instructions for further details on access provisions for these forms.

1. ESTABLISHMENT INFORMATION	2. EMPLOYMENT INFORMATION
ESTABLISHMENT NAME _____	If you don't have accurate figures, see the instructions on the back of this sheet.  AVERAGE NUMBER OF EMPLOYEES _____  TOTAL HOURS WORKED BY ALL EMPLOYEES LAST YEAR _____
STREET ADDRESS _____	
CITY, STATE, ZIP CODE _____	
INDUSTRY DESCRIPTION (e.g., village fire department) _____	
NORTH AMERICAN INDUSTRIAL CLASSIFICATION SYSTEM (NAICS) _____	

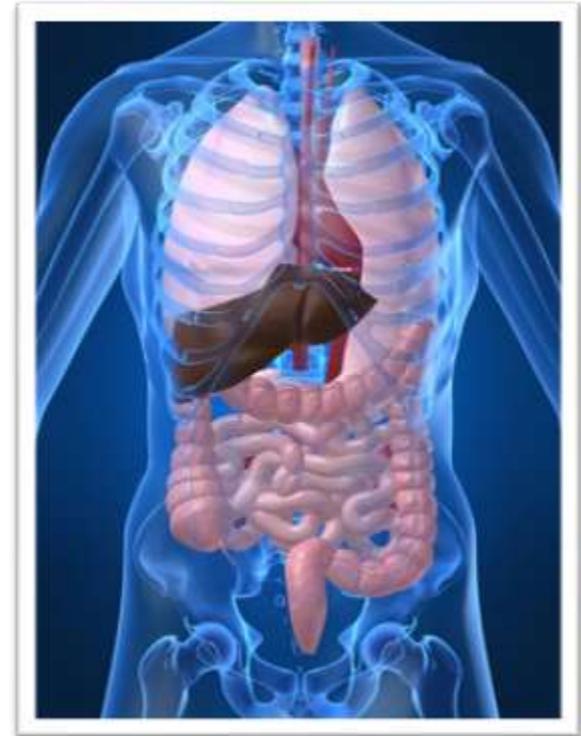
Enter the column totals from the Log of Occupational Injuries and Illnesses (SH 900) for each category (column labels under each line correspond to the columns on the Log). If a category has no cases, enter "0."

3. NUMBER OF CASES	4. NUMBER OF DAYS	5. INJURIES AND ILLNESS TYPES
DEATHS _____ (Col. G)	AWAY FROM WORK _____ (Col. K)	INJURIES _____ (Col. 1)
DAYS AWAY FROM WORK _____ (Col. H)		SKIN DISORDERS _____ (Col. 2)
JOB TRANSFER OR RESTRICTION _____ (Col. I)	JOB TRANSFER OR RESTRICTION _____ (Col. L)	RESPIRATORY CONDITIONS _____ (Col. 3)
OTHER RECORDABLE CASES _____ (Col. J)		POISONINGS _____ (Col. 4)
		HEARING LOSS _____ (Col. 5)
		ALL OTHER ILLNESSES _____ (Col. 6)

6. CERTIFICATION	
I certify that I have examined this document and that to the best of my knowledge the entries are true, accurate, and complete.	
SIGNATURE _____	TITLE _____
PRINT NAME _____	DATE _____

SH-900.1 (12-03)

# TOXICOLOGY



# Definition of Toxicology



Toxicology is the study of the harmful effects of chemicals on biological systems



# Chemicals are part of everyday life



# What Makes A Chemical Hazardous?

**THAT  
THING  
YOU  
DO!**

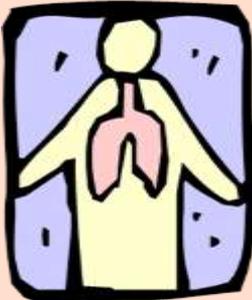
The presence of hazardous materials does not necessarily mean danger:

- Gather information (SDS)
- Recognize the hazards
- Use the chemical as intended
- Isolate exposure
- Use common sense



# PHYSICAL MANIFESTATIONS OF CHEMICALS

# Physical Manifestations of Chemicals

Manifestation	Description	Routes of Entry
<b>Vapors</b>	The gaseous form of substances that are normally solid or liquid room temperature. The vapor can be changed back to the solid or liquid state either by increasing or decreasing the temperature alone.	 Inhalation
<b>Gases</b>	Some gases are: easy to detect, some are odorless and colorless, some even deaden your sense of smell	
<b>Solids</b>	A solid is a material which retains its form, such as a stone.	
<b>Dusts</b>	Dusts are tiny solid particles. Larger particles are trapped in the mucous and hairs of the nose and windpipe. Smaller dust particles can be breathed deeply into the lungs.	 Absorption
<b>Liquids</b>	A liquid is a state of matter which flows and can change its shape and is not easily compressible and maintains a relatively fixed volume.	
<b>Fumes</b>	Fumes are formed when a solid, especially metals are heated to very high temperatures and become vaporized. Example: welding fumes	

# How do Chemicals Enter the Body?



## Inhalation

You can breathe toxic dusts, gases, or fumes.

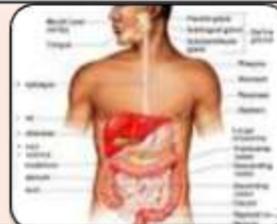
These can harm your respiratory system or pass from your lungs into your bloodstream and harm another part of your body.



## Absorption

Toxic liquids can cause damage if they come into contact with your skin or eyes.

Some toxic liquids can pass through your skin and enter the bloodstream and cause harm to another part of the body.



## Ingestion

Toxic substances can get into your body if you eat or smoke without washing contaminated hands.



## Injection

Toxic substances can get into your body if you are stuck with a contaminated sharp object

# Routes of Entry Into The Body # 1



The custodian used a super adhesive to secure a loose floor tile. After use, he left the container in the room without replacing the cover on the can.

Later employees complained of headache, nausea, dizziness and burning eyes.

What was the most likely cause of these symptoms?

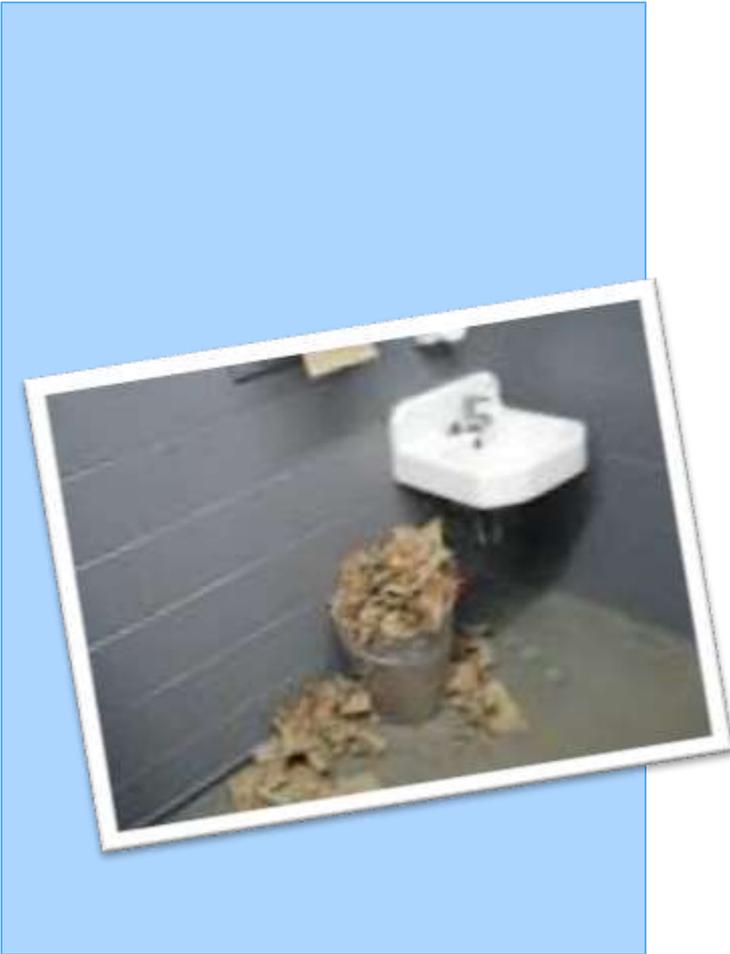
- A. Skin Absorption
- B. Work related stress
- C. Lack of oxygen
- D. Inhalation of solvents

## Routes of Entry # 2

The garbage can was overflowing and to make it fit, Mr. Smart squished it down with his hands.

This is a possible means of which route of entry into the body?

- A. Inhalation
- B. Ingestion
- C. Absorption
- D. Injection



## Routes of Entry # 3



After working with a cleaning product, Artie decided to have a quick snack. Without leaving his desk, he peeled his orange and ate it.

He could have exposed himself by which route?

- A. Inhalation
- B. Ingestion
- C. Absorption
- D. Skin contact

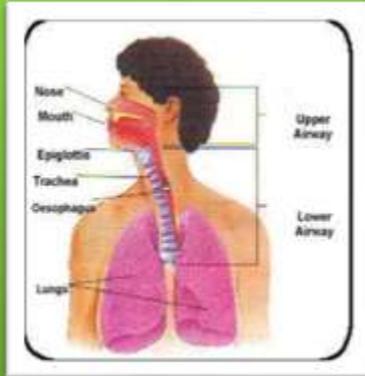


# BASIC DEFENSE MECHANISMS

# Basic Defense Mechanisms

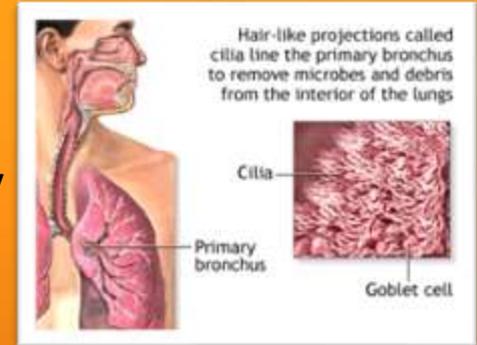
## Upper Respiratory Tract

- Coughing
- Sneezing
- Nose hairs
- Mucous



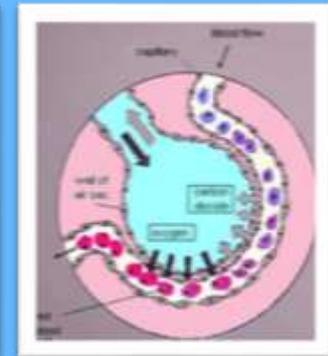
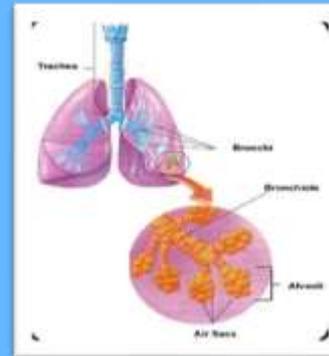
## Lower Respiratory Tract

- Cilia
- Mucous
- Muco-ciliary escalator



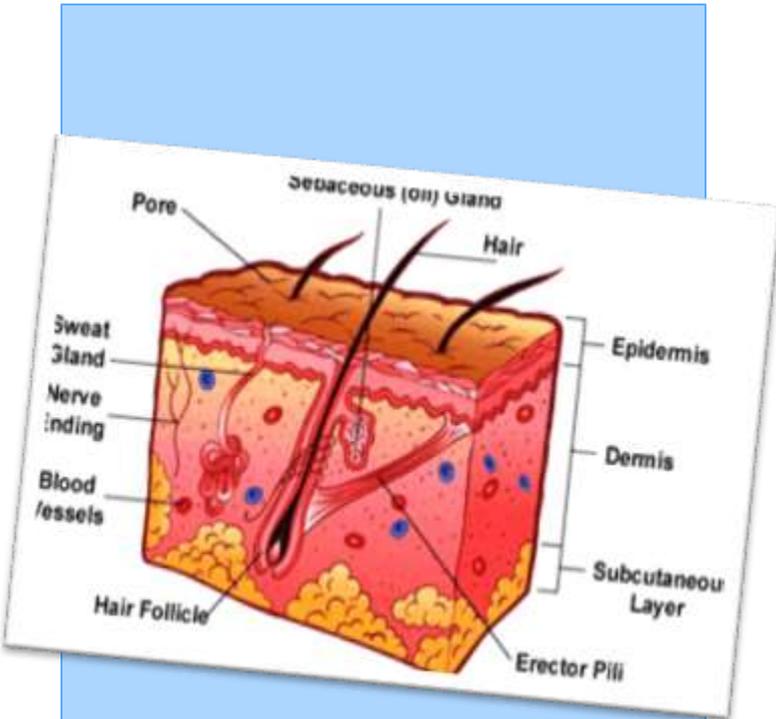
## Alveolar Region

- Immune System
  - macrophages



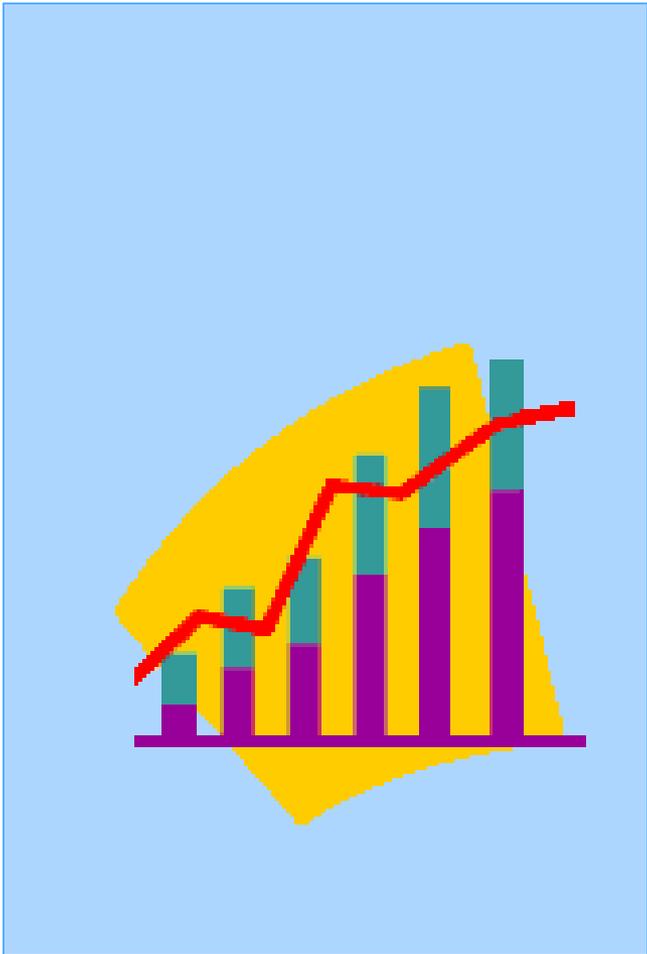
# Skin

- Largest body organ
- Waterproof protective layer against:
  - Organisms
  - Chemicals
- Overexposure to solvents denaturizes the skin, leading to:
  - Cuts
  - Breaks
  - Dry skin



# Dose-Response Relationship

The greater the amount of a substance that enters the body, the greater is the health effect on the body



# Body Metabolism



- Detoxification
  - Liver
- Elimination
  - Skin, kidneys, lungs
- Accumulation
  - Rate of exposure exceeds the rate of elimination
- Chemical accumulation is unique to the chemical
  - Ammonia does not accumulate
  - Lead stored in bone
  - PCBs stored in fat
  - Asbestos stored in lungs



# TYPES OF HEALTH EFFECTS

TYPE OF HEALTH EFFECTS	DESCRIPTION	EXAMPLE
<b>Acute</b>	Effects occur immediately after exposure	Coughing, sneezing, headache
<b>Chronic</b>	Effects occur after repeated exposure over time	Hearing loss from ear buds
<b>Sensitization</b>	Allergic reaction	Rash from laundry detergent
<b>Synergistic</b>	Two agents combined together create a more toxic one	Bleach + ammonia = chlorine gas
<b>Mutagens</b>	Cause a change in genetic cell make-up	X-rays
<b>Teratogens</b>	Cause defects in the unborn	Measles, Thalidomide
<b>Carcinogens</b>	Cause cancer	Benzene, asbestos
<b>Localized</b>	Health effect at the point of contact	Skin burn
<b>Systemic</b>	Effects occur elsewhere from where the chemical entered the body	Lead poisoning, fever

# Health Effects Case Scenario # 1



Cindy walked into the bathroom immediately after it was cleaned with an ammonia-based cleaner.

Within seconds, her eyes started to tear, she began to cough and had trouble breathing.

Her health effects are considered to be:

- A. Acute Health Effect
- B. Chronic Health Effect
- C. Localized Health Effect
- D. Systemic Health Effect

# Health Effects Case Scenario # 2

Whenever Pete uses a particular cleaner he breaks out in a rash on the palms of his hands.

What type of health effect is this?

- A. Random
- B. Sensitization
- C. MRSA
- D. Teratogenic Health Effect



# Health Effects Case Scenario # 3



Sam used Windex to clean his sticky computer screen. He couldn't get the waxy stains off so he followed with Clorox clean-up.

He began to experience dizziness, weakness, difficulty breathing and burning sensations of the mucus membranes.

What is Sam experiencing?

- A. Acute Health Effects
- B. Sensitization
- C. Synergistic
- D. Target Organ Health Effects

# Health Effects Case Scenario # 4

:



In the early 1950's – 1960's the drug Thalidomide was administered to pregnant women to combat premature miscarriages and severe nausea.

Offspring were frequently born with limb defects.

This type of health effects is called:

- A. Carcinogenic Health Effect
- B. Mutagenic Health Effect
- C. Systemic Health Effect
- D. Teratogenic Health Effect

# Health Effects Case Scenario # 5



Excessive exposure to x-rays can cause defects in the cell's genetic make-up.

What is this type of health effect called?

- A. Localized Health Effects
- B. Mutagenic Health Effects
- C. Non-specific Health Effects
- D. Medical Health Effects

# Health Effects Case Scenario # 6

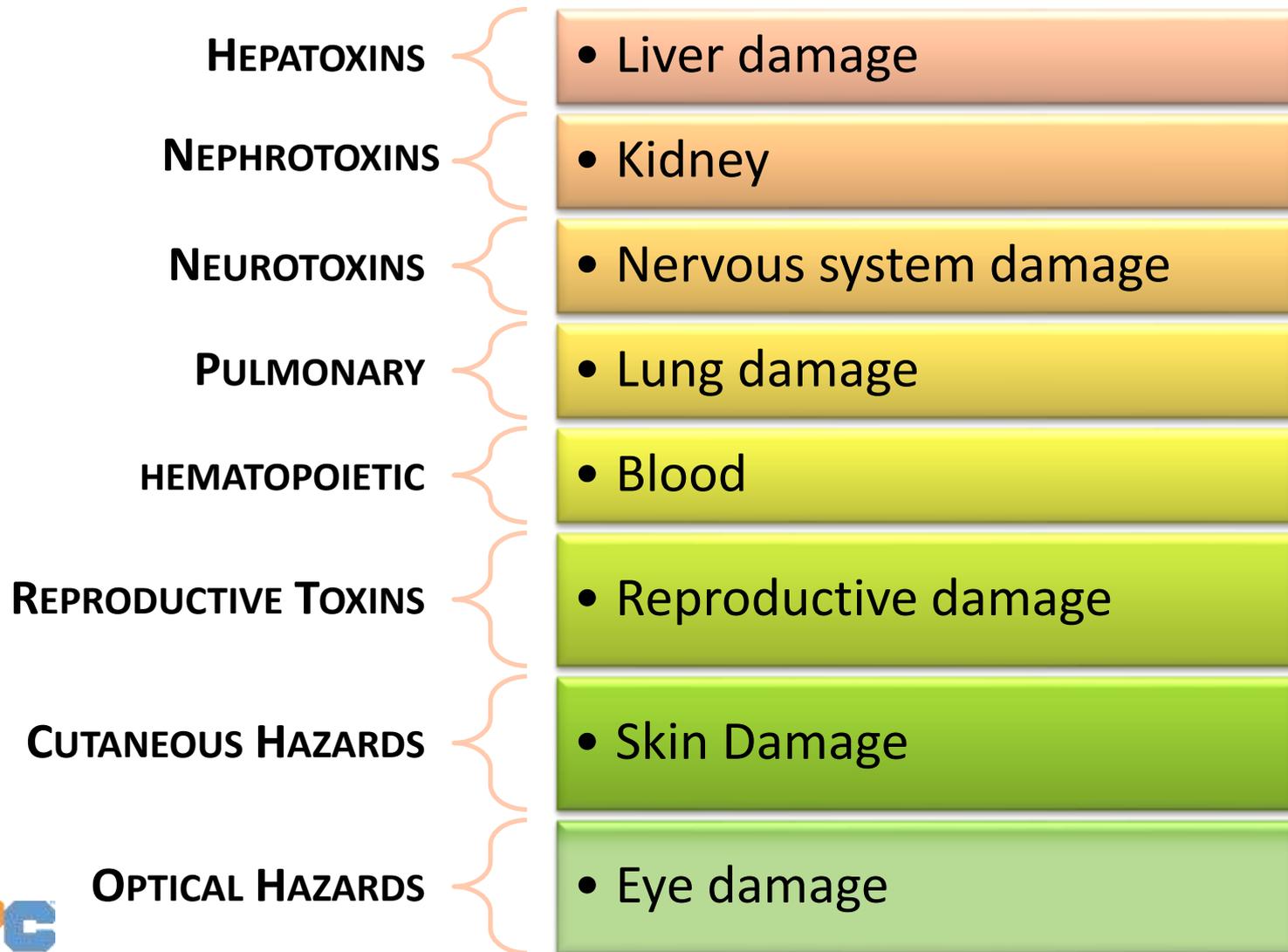


- The Hepatitis B virus causes liver damage.
- Benzene is causes damage to the blood.
- Toluene is associated with liver and kidney damage.
- Methanol is associated with eye damage.

These are all examples of the what type of health effects?

- A. Target Organ Effects
- B. Worksite Health Effects
- C. Localized Health Effects
- D. Systemic Health Effects

# Types of Target Organ Effects





# EXPOSURE ASSESSMENT & CONTROL

# Biological Threshold Level

Some substances have measurable exposure levels below which most people will not likely show any health effects

PEL

- **Permissible Exposure Limit**
- An exposure limit published and enforced by OSHA as a legal standard

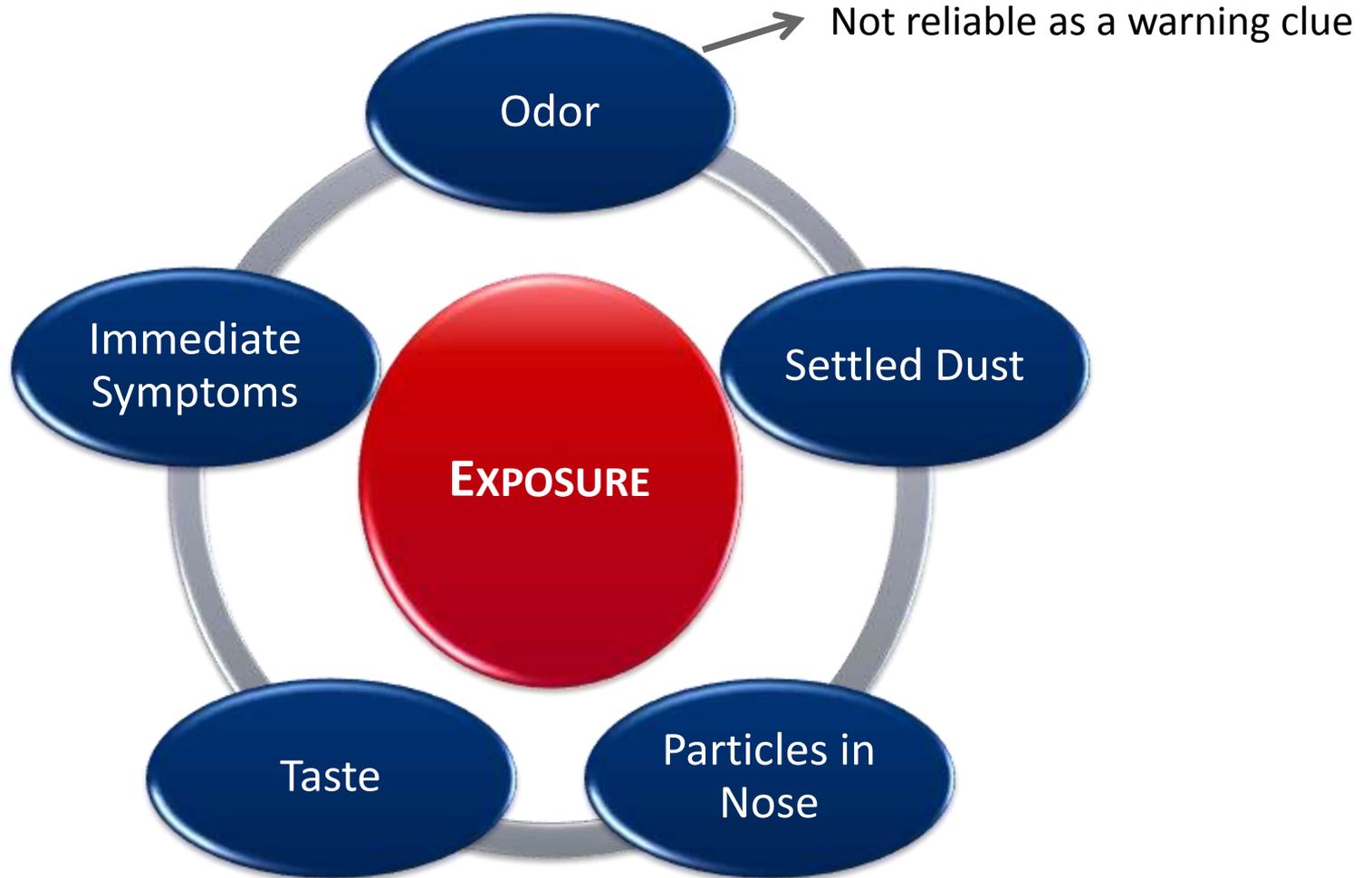
TVL

- **Threshold Value Limit**
- A time-weighted average guideline concentration under which most people can work consistently for 8 hours a day for 40 hours with no harmful effects



# DETERMINING EXPOSURE

# Practical Clues to Exposure



# Environmental Monitoring

## AIR SAMPLING

Performed by an Industrial Hygienist

### Area Sampling

Performed by a laboratory

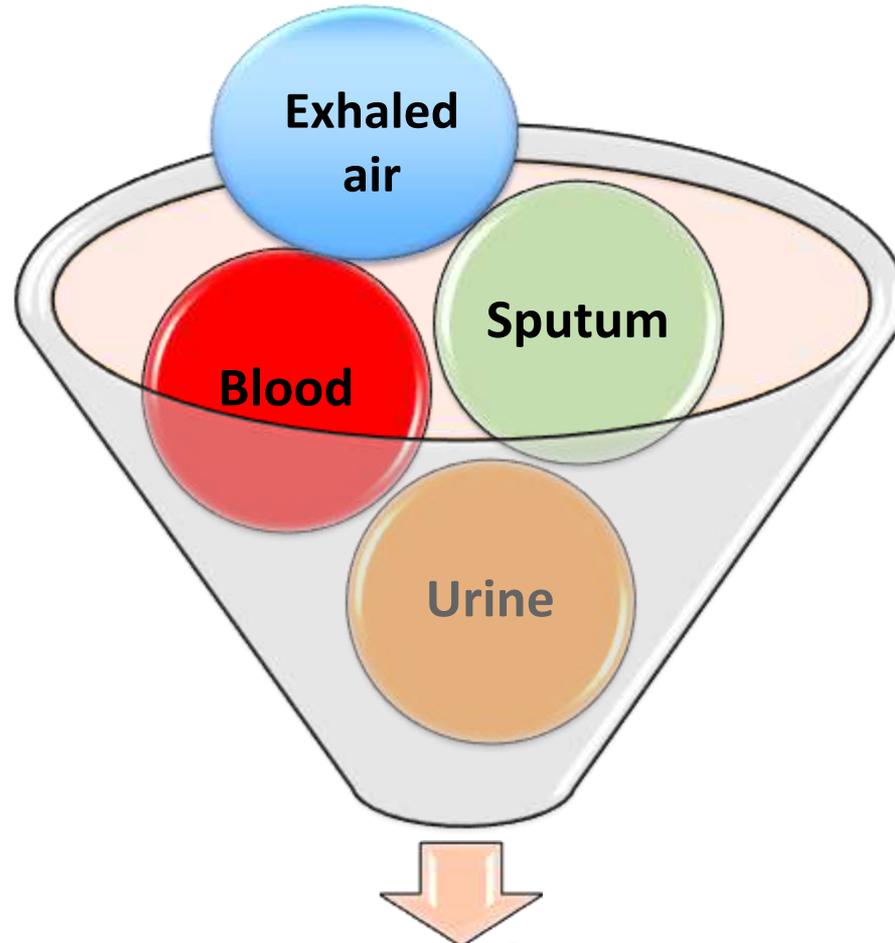
### Direct Reading

Immediate quantification of air pollutant

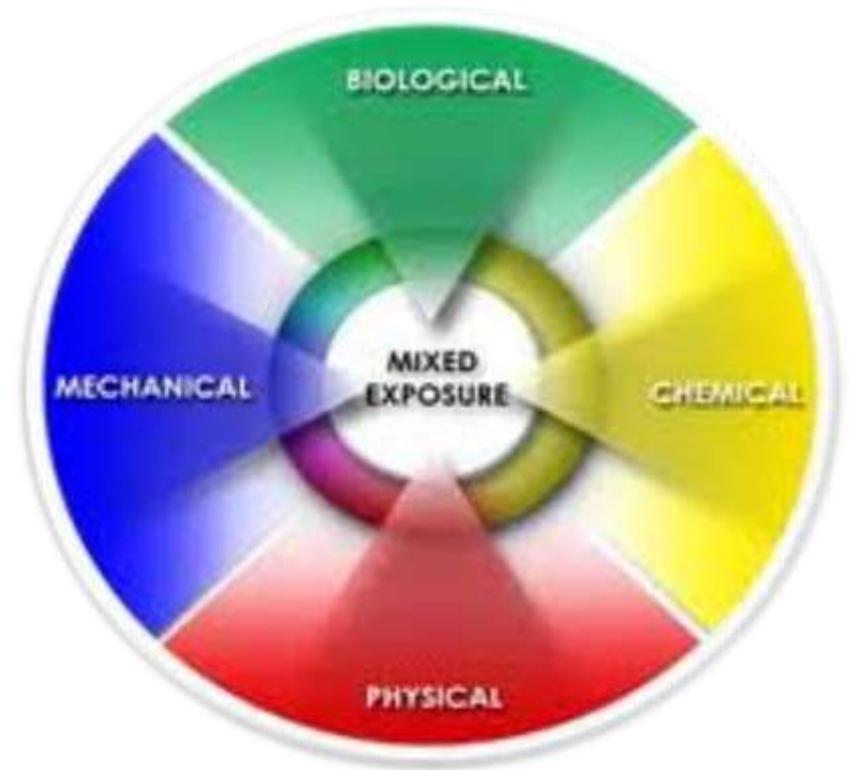
### Personal Air Sampling

Worn by workers to measure individual's actual exposure

# Biological Monitoring



**Chemical levels and/or its breakdown products are measured**



# CONTROLLING EXPOSURE

# Methods of Controlling Exposure



# Engineering Controls

Engineering controls reduce the hazard at the source of the exposure

## SUBSTITUTION

- Switching to a less hazardous product

## ISOLATION

- Isolation at the source of exposure (construction dusts)

## LOCAL EXHAUST

- Fume hood of intake placed over the source

## GENERAL VENTILATION

- General circulation and replacement of fresh air

## WET METHODS

- Reducing dust exposure

## LIMITING EXPOSURE

- Reducing exposure at the source (Noise dampeners)

# Administrative Controls

Administrative controls seek to control employees' exposure by changing the way a task is performed

Training employees on workplace exposures

Time rotation based on task

Establishing safety policies

Workplace hygiene

Proper waste disposal

# Personal Protective Equipment (PPE)

PPE should be used when engineering controls are not effective

Employees wear PPE to protect them from the hazard in their environment



# What is GHS?

## **Hazard Communication Standard 2012**

The new standard brings the United States into alignment with the GHS system of classification and labeling of chemicals

## Globally Harmonized System (GHS)

- This is an international approach to hazard communication,
- It provides agreed criteria for classification of chemical hazards,
- It utilizes a standardized approach to label elements and safety data sheets.

# Major Changes to the Hazard Communication Standard

<b>Hazard Classification</b>	Chemical manufacturers/importers must determine the hazards of the chemicals they produce or import.
<b>Labels</b>	Label must include a signal word, pictogram, hazard statement, and precautionary statement for each hazard class and category.
<b>Safety Data Sheets</b>	The new format 16 specific sections
<b>Information &amp; Training</b>	By December 1, 2013.

# GHS Completion Dates

EFFECTIVE COMPLETION DATE	REQUIREMENT(S)	WHO
December 1, 2013	Train employees on the new label elements and safety data sheet (SDS) format.	Employers
June 1, 2015* December 1, 2015	Compliance with all modified provisions of this final rule, except:  The Distributor shall not ship containers labeled by the chemical manufacturer or importer unless it is a GHS label	Chemical manufacturers, importers, distributors and employers
June 1, 2016	Update alternative workplace labeling and hazard communication program as necessary, and provide additional employee training for newly identified physical or health hazards.	Employers
Transition Period to the effective completion dates noted above	May comply with either 29 CFR 1910.1200 (the final standard), or the current standard, or both	Chemical manufacturers, importers, distributors, and employers

# Why Train Employees Now?

OSHA believes that American workplaces will soon begin to receive labels and SDSs that are consistent with the GHS

It is important to ensure that when employees begin to see the new labels and SDSs in their workplaces:

- they will be familiar with them
- understand how to use them
- access the information effectively.



# CHEMICAL INFORMATION

# Container Labeling

Materials being decanted from a larger container must be labeled

All chemical containers in the workplace must be labeled with:

- The name of the ingredient
- The manufacturer
- The most immediate hazard warning



# Types of Labels

## In-house label

- Identity of the hazardous chemical
- Appropriate hazard warning



## Manufacturer's Label

- Identity of the hazardous chemical
- Appropriate hazard warning
- Name and address of a responsible party



# Label Signal Words

A signal word is used to indicate the relative level of hazard severity



## **More severe hazard**

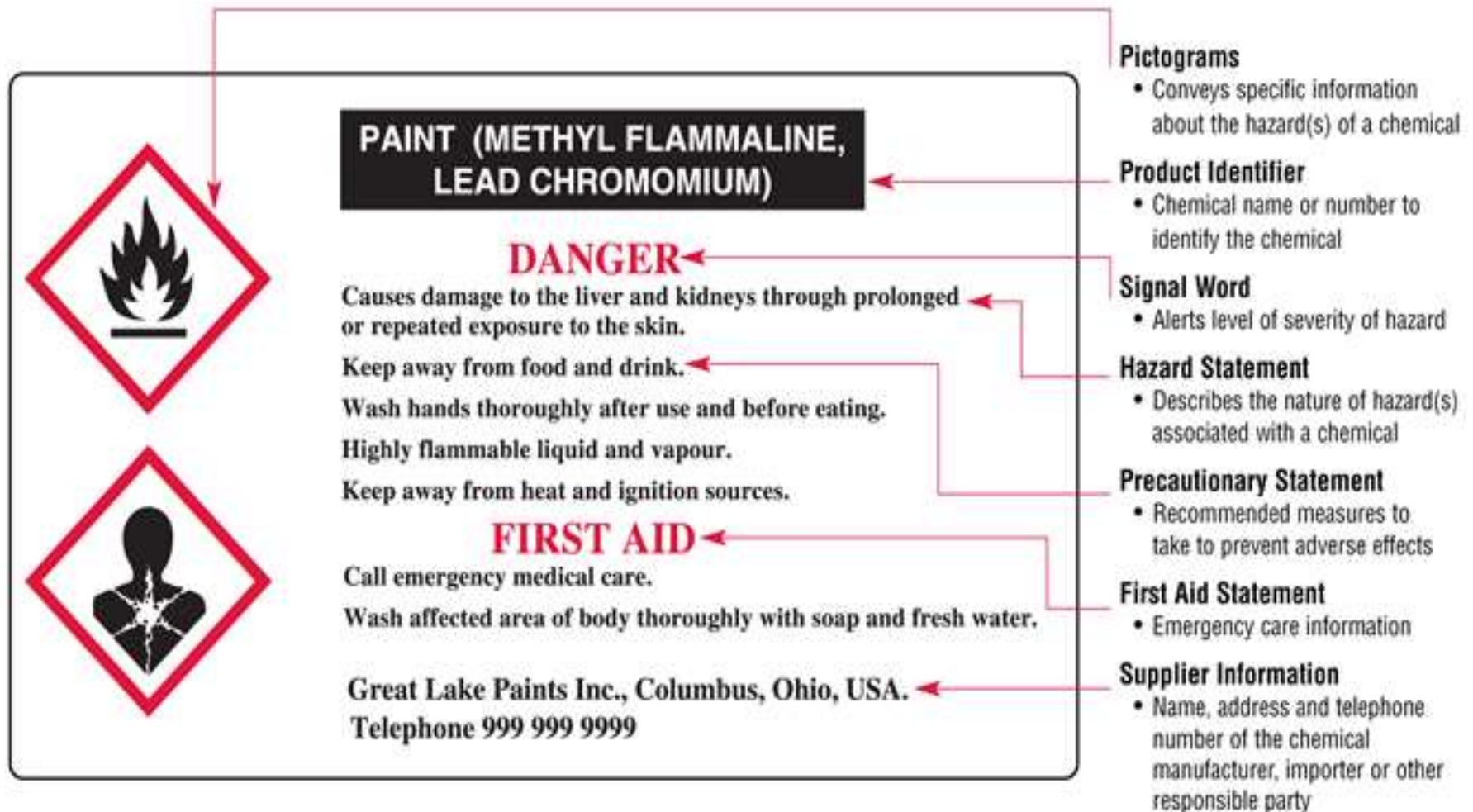
Harmful or fatal if swallowed. A taste to a teaspoonful taken by mouth could kill an average sized adult

## **Less severe hazard**



Harmful if swallowed. A teaspoonful to an ounce taken by mouth could kill an average sized adult.

# HCS/GHS Labeling Components



## HCS Pictograms and Hazards

### Health Hazard



- Carcinogen
- Mutagenicity
- Reproductive Toxicity
- Respiratory Sensitizer
- Target Organ Toxicity
- Aspiration Toxicity

### Flame



- Flammables
- Pyrophorics
- Self-Heating
- Emits Flammable Gas
- Self Reactives
- Organic Peroxides

### Exclamation Mark



- Irritant (skin and eye)
- Skin Sensitizer
- Acute Toxicity
- Narcotic Effects
- Respiratory Tract Irritant
- Hazardous to Ozone Layer (Non-Mandatory)

### Gas Cylinder



- Gases Under Pressure

### Corrosion



- Skin Corrosion/Burns
- Eye Damage
- Corrosive to Metals

### Exploding Bomb



- Explosives
- Self-Reactives
- Organic Peroxides

### Flame Over Circle



- Oxidizers

### Environment (Non-Mandatory)



- Aquatic Toxicity

### Skull and Crossbones



- Acute Toxicity (fatal or toxic)



# SAFETY DATA SHEETS (SDS)

*A document that describes everything  
that is known about a chemical*

# Change in Information Sheets

## OLD

- Material Safety Data Sheets (MSDS)
- 10 sections of information

## NEW (HazCom 2012)

- Safety Data Sheets (SDS)
- 16 sections of information

# Safety Data Sheet Sections

- SECTION 1 • Identification/Product Name
- SECTION 2 • Hazard Information
- SECTION 3 • Ingredient Information
- SECTION 4 • First Aid Measures
- SECTION 5 • Fire Fighting Measures
- SECTION 6 • Accidental Release Measures
- SECTION 7 • Handling & Storage
- SECTION 8 • Exposure Controls & Personal Protection

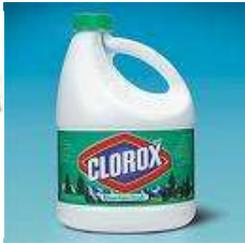
- SECTION 9 • Physical & Chemical Properties
- SECTION 10 • Stability & Reactivity
- SECTION 11 • Toxicological Information
- SECTION 12 • Ecological Information
- SECTION 13 • Disposal Considerations
- SECTION 14 • Transport Information
- SECTION 15 • Regulatory Information
- SECTION 16 • Other Information

# How to Get A SDS

## **METHODS TO OBTAIN AN SDS:**

- Internet-Company Website
- E Mail
- Phone/Fax
- Mail

Your employer must obtain Safety Data Sheets from the chemical manufacturer



# COMMON WORKPLACE CHEMICALS

# Chemical Safety



Chemicals are generally safe when used according to manufacturer's directions

However, chemicals can be unsafe if:

- Mislabeled
- Misused
- Handled improperly

# Common Workplace Solvents

**A Solvent is a chemical which dissolve other materials**

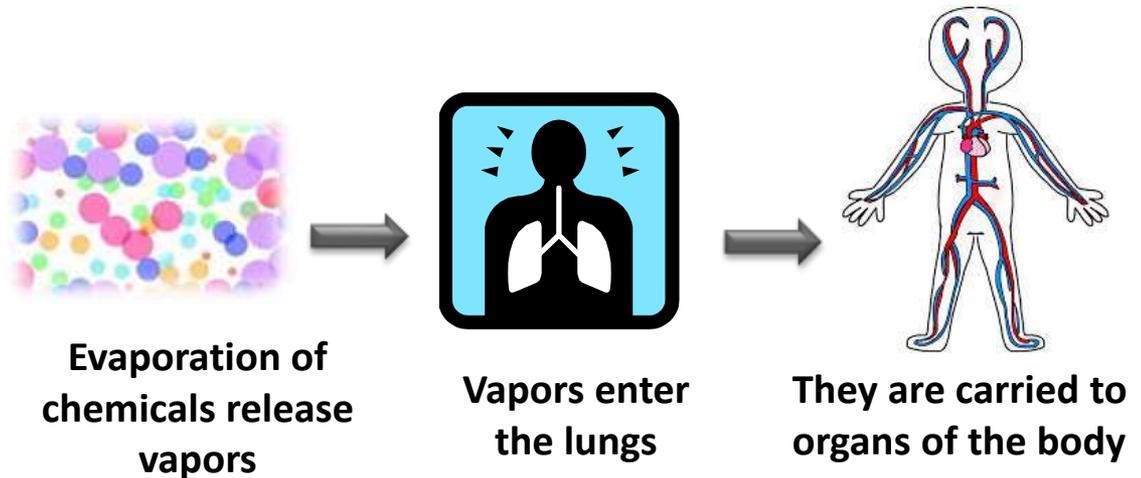
Example: Water is a solvent for soap



# Inhalation of Solvents

## ACUTE HEALTH EFFECTS

- Central nervous system effects
- Dizziness
- Light-headedness
- Depression
- Nausea
- Headache
- Respiratory irritation



- This is also true for odorless substances
- A solvent's volatility and evaporation rate determines how quickly it will evaporate.

# Skin Contact with Solvents

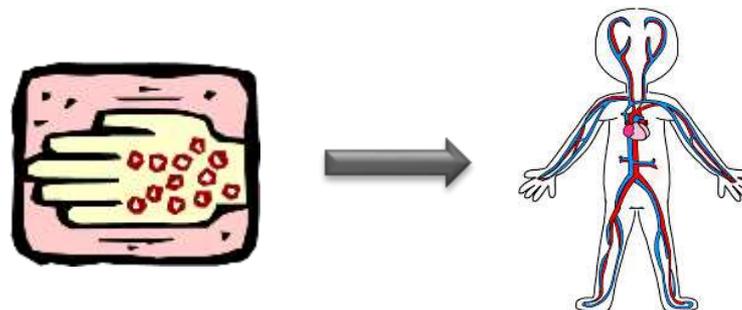
## ACUTE HEALTH EFFECTS

- Drying of skin

## CHRONIC HEALTH EFFECTS

- Red, inflamed, thick, dry skin
- Allergic skin reactions

Direct contact may cause drying and chapping of skin



Solvents may pass through the skin to the bloodstream

- Broken, chapped or dry skin allow easier passage into the bloodstream
- Chronic exposure may lead to dermatitis

# Ingestion of Solvents

Deliberate and direct ingestion of chemicals is unlikely in workplace

## ACUTE HEALTH EFFECTS

- Abdominal cramps
- Nausea
- Diarrhea
- Ingestion can cause irritation of the gastrointestinal tract

An indirect means of ingestion is more likely:

- Unwashed hands
- Eating or drinking in the workplace where chemicals are being used
- Mists or droplets can contaminate food



# Common Office Chemicals

TYPE	HEALTH HAZARD	HEALTH EFFECTS
Correction Fluid	Non toxic or solvent based	<p>Acute health effects – <i>examples:</i></p> <ul style="list-style-type: none"> <li>• Headache</li> <li>• Irritated and tearing eyes</li> <li>• Nausea</li> <li>• Dizziness</li> <li>• See SDS for specific information</li> </ul> <p>Chronic Health Effects - <i>examples</i></p> <ul style="list-style-type: none"> <li>• Upper respiratory tract irritation</li> <li>• Dermatitis</li> <li>• Irritated skin</li> <li>• See SDS for specific information</li> </ul>
Cleaning Chemicals, Carpet Cleaners	Solvents or Corrosives; storage or reactive hazards	
Paints	Solvents	
Glues	Solvents	
Inks, markers	Non Toxic; solvent based	
Formaldehyde	Solvents	
Toners	Dust particles	



# DUST HAZARDS

# Dusts in The Workplace:

Dusts result from solid materials that have been crushed, drilled ground, or scraped



## Sources of dusts:

- Outside dusts
- Regular household dust
- Maintenance work resulting from drilling, sanding, or abrasive work
- Construction dusts – lead, asbestos, fiberglass, nuisance dusts

# Dusts in the Workplace

## Nuisance Dusts

Increase occupant discomfort

- Eye irritation
- Coughing
- Sneezing
- Wheezing
- Allergies
- Chest tightness

## Bacterial & Fungal Infections

- May occur from inhaling active biological organisms
  - Bacterial & viral spores, mold
- May be present in “regular building” dust
- Sources:
  - > Persons with infectious disease
  - > Persons who spit indoors
  - > Sputum - uncovered sneezes and coughs



# PHYSICAL HAZARDS

# Slips, Trips and Falls

Slips, trips and falls can result in:

- head injuries
- back injuries
- broken bones
- cuts and lacerations
- sprained ankles
- sprained muscles



# Slips and Falls

Most slip, trip and fall incidents are preventable with general precautions and safety measures

Employees may slip and fall from stepping on:

- wet spots
- food spills
- polished floors
- chairs and other unsecured surfaces
- step ladders without a non-slip base
- loose flooring tiles and mats
- uneven walking surfaces
- floor clutter
- unsecured electrical cords

# Lifting Hazards

Musculoskeletal injuries may result from:

- lifting
- carrying loads
- pushing
- pulling
- handling materials

## Top 5 Causes of Back Sprain or Strain

1. Lifting improperly
2. Making a sudden movement
3. Falling down
4. Carrying excess body weight or a heavy handbag
5. Poor posture



**The wrong way!**



**The right way!**

# BED BUGS



# Spot the Real Thing



Flea



Ant



Spider beetle



Bedbug



Roach



Bedbug

# Bedbug Facts



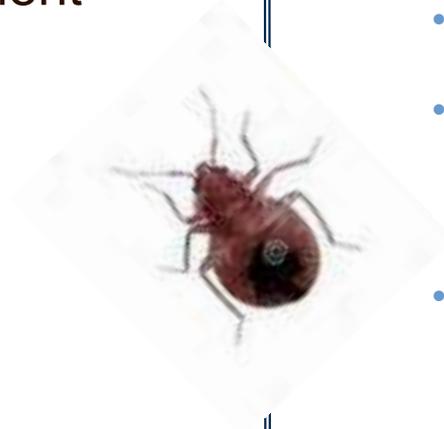
- Bedbugs are attracted to humans through heat and CO<sub>2</sub>
- They are most active at night when people are sleeping
- They are neither a function of poor personal hygiene nor unsanitary conditions
- They are relatively good walkers/runners
- They can live for several months without food or water
- They often hide in cracks in furniture, floors or walls
- They feed by piercing the skin
- They can feed on pets but do not thrive on them

# Methods of Bedbug Introduction

## Passive

➤ They are introduced from another infested location, but not by its own movement

- Furniture
- Mattress
- Guests
- Employees
- Travel



## Active

➤ Bedbugs migrate by walking from an infested area

- From one room to another
- From one apartment to another via pipes, telephone or cable wires
- Down a hallway after dropping off an item being discarded

# Bedbug Infestation



They are found in dwellings with a high resident turnover rate:

- Apartment buildings
- Hotels
- Shelters
- Dormitories
- Nursing homes



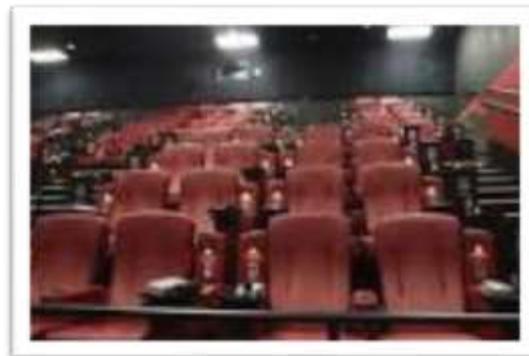
Bedbugs are more common:

- in the homes of people who travel (business travelers)
- stay in hotels



They are also found in other areas:

- Schools
- Child care facilities
- Movie theaters
- Airplanes
- Clothing stores



# Impact of Having Bedbugs

**ONE LIVE BEDBUG IS  
NOT AN INFESTATION**



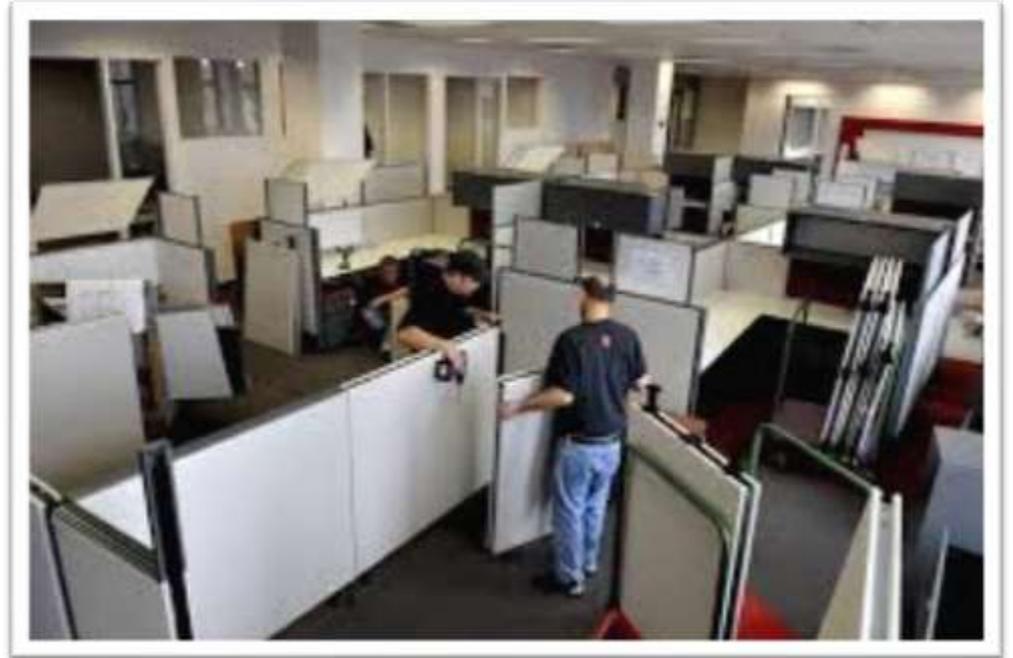
- Bed bugs do not carry diseases
- Bites on skin can result in allergic reactions and secondary infections
- Infestation can cause:
  - stress
  - anxiety and sleeplessness,
  - discomfort of bites
  - social stigma

# Prevention

- Avoid clutter
  - It provides the ideal breeding conditions and makes infestations difficult to control
- Never pick up discarded items on the streets
- Avoid refurbished mattresses and/or used furniture
- Use mattress encasements
- Seal crevices and cracks
- When travelling, inspect mattresses

**Contact your building management if you see bedbugs in the workplace**





# INDOOR AIR QUALITY

# Is Work Making You Sick?

- Eye, skin, throat & nose irritation
- Headaches
- Fatigue
- Coughing, sneezing
- Shortness of breath
- Dizziness and nausea
- Skin dryness and rashes
- May trigger asthma, allergic reactions, allergies

- Exhausted in the early afternoon but feel better after getting a breath of outside air
- Symptoms peak in the early afternoon
- Lowered concentration causing distraction
- Reduced productivity
- Reduced energy levels
- Increased absences

# If You Answered YES, and these Symptoms:

- are a common occurrence;
- are a shared experience among building occupants;
- do not occur prior to occupying the building

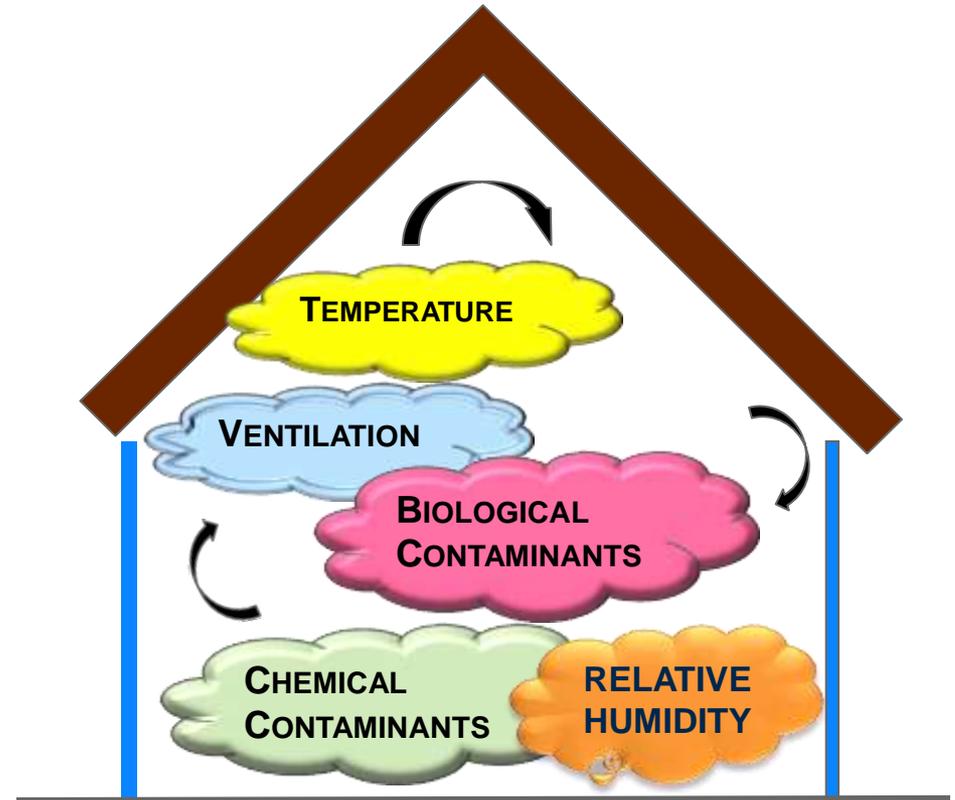
You may be experiencing symptoms of:

- Poor Indoor Quality (IAQ)
- Tight Building Syndrome (TBS)
- Sick Building Syndrome (SBS)
- Building Related Illness (BRI)

# Indoor Air Quality (IAQ)

## Reasons for Poor IAQ

- Most buildings are over 50 years old
- Buildings were designed to be air tight
  - Fewer windows
  - Rely on HVAC
- Multiple use of room
  - Copy room
  - Offices
  - Storage

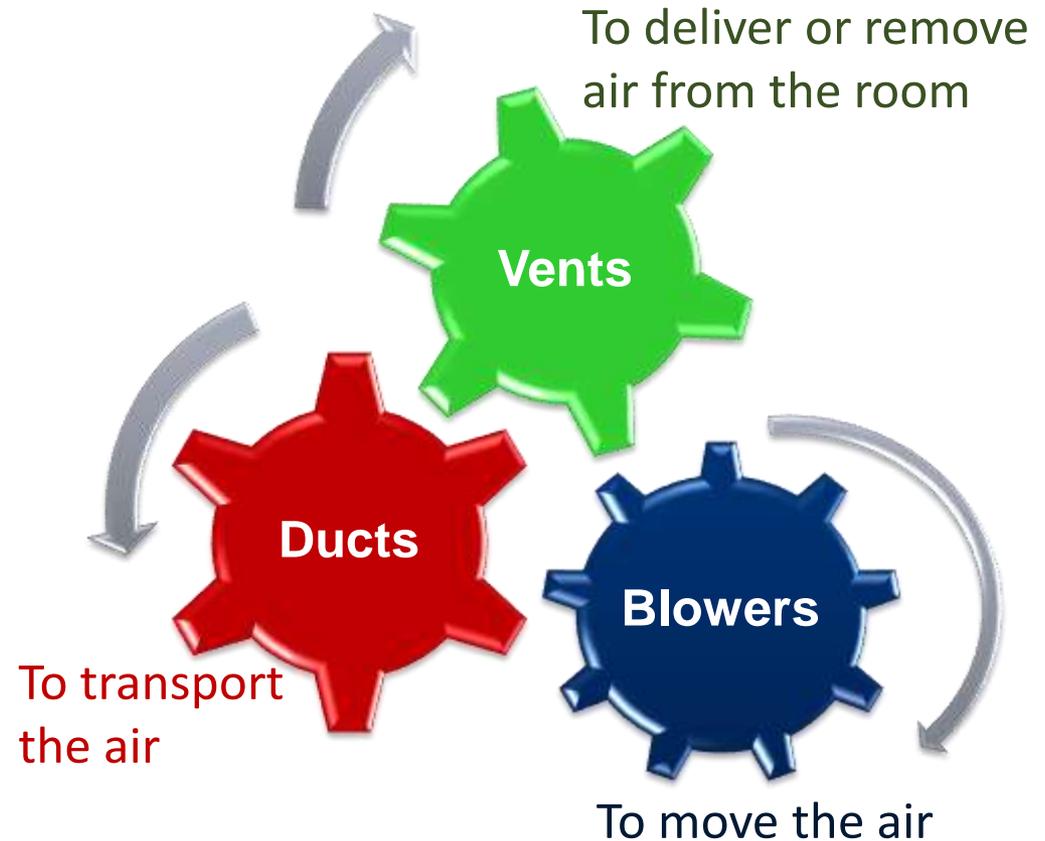


**Most IAQ problems result from insufficient outdoor air to ventilate an indoor space**

# HVAC – Heating Ventilation Air Conditioning

## Common IAQ Problems

- Stuffy Air
- Rooms too hot/cold
- Funny smell
- Chemical smell
- Presence of mildew/Moldy smell



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All mechanical ventilation systems include three basic components

# Causes of Poor IAQ

## HVAC System

- System may be inadequate for the building's need
- System not working properly
- Closed outdoor dampers
- Failed system controls, such as thermostats
- Blocked air vents/fire dampers

## Outside Sources

- Outside air
- Car emissions
- Smoking near air intake
- Dumpsters located near air intake

# Causes of Poor IAQ

## Building Design

- Old
- Building being used for purposes other than initially intended

## Building Occupants & Activities

- Too many occupants
- Chemicals
- Smoking
- Machines
- Pesticides

# Other Factors Influencing Comfort

Complaints are not always a result of poor indoor air quality

- Temperature & Relative Humidity
- Noise
- Lighting
- Ergonomic stressors (work station & task design)
- Job related psychological stressors can contribute to the complaints
- Cold & Flu complaints

# Factors Affecting IAQ and Comfort

FACTORS	SOURCES
<b>Carbon dioxide</b>	People; fuel combustion
<b>Carbon monoxide</b>	Automobile exhaust: loading docks, air intakes
<b>Formaldehyde</b>	New furniture & carpets
<b>Particulates</b>	Paper, air intakes, vent ducts, dust, carpets
<b>Inadequate ventilation</b>	<ul style="list-style-type: none"> <li>▪ Energy-saving and maintenance measures</li> <li>▪ Improper system design or operation</li> <li>▪ Occupant tampering with HVAC system</li> <li>▪ Poor office layout</li> </ul>
<b>Volatile Organic Compounds</b>	Copying & printing machines; computers; carpets; furnishings; cleaning materials, solvents; smoke; paints, adhesives, caulking; perfumes, hairsprays
<b>Microbial matter</b>	Stagnant water in HVAC system; Condensate drain pans, & water towers; Wet and damp materials; Humidifiers

# Handling IAQ Problems

- Document the occurrence
- Identify any recent changes in the immediate environment
- Inform building maintenance

## Common Solutions

- Allow adequate desk distance from printer/copy machine exhaust.
- Open windows at pre-determined times
- Turn the thermostat up/down
- Removing carpets, rugs
- Improve housekeeping/storage practices
- Do not block vents



# SAFE WORK PRACTICES

# Hand Washing

The most effective method  
for reducing the spread of  
infectious diseases

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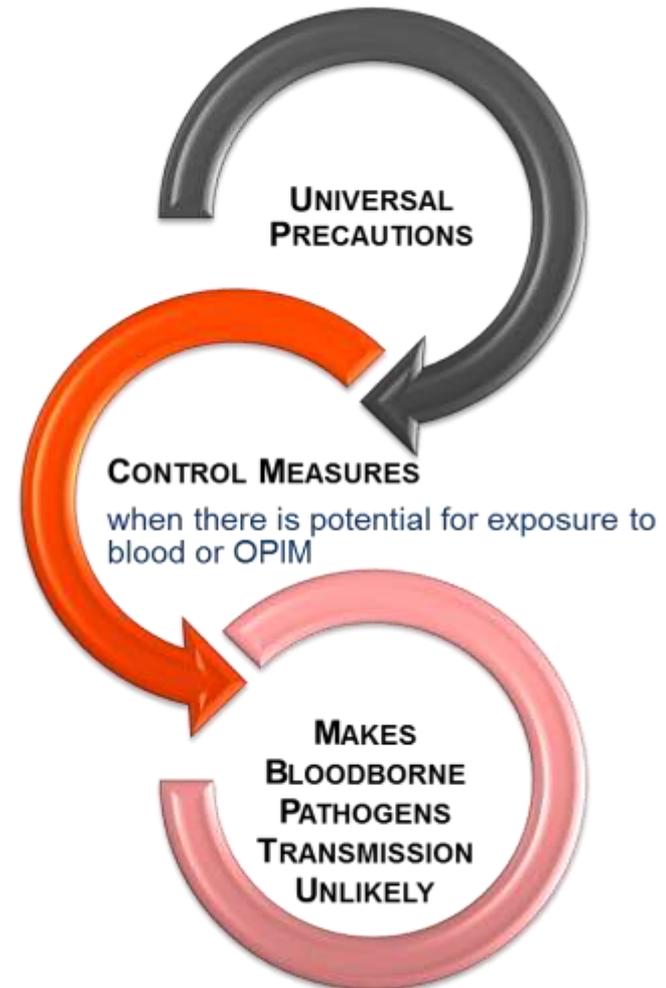
## Until you wash, avoid:

- Eating & drinking
  - Handling food
  - Touching your face
  - Smoking
  - Applying cosmetics
  - Handling contact lenses
-

# Universal Precautions

A practice of treating all human blood and OPIM as if they are infectious at all times.

**ALL EMPLOYEES MUST  
PRACTICE UNIVERSAL  
PRECAUTIONS**



# WASH HANDS



# Precautions & Safe Work Practices

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Read labels

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Follow manufacturer's instructions

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Flush eyes/skin after contact with chemicals

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Recap chemical containers

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Don't mix chemicals

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Use gloves to protect your hands

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If you are allergic to latex, use an alternative glove

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Cover your sneeze and cough

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Wash your hands!

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**The End**