

Hazard Communication & Right-to-Know Laws



for Pedagogues and School Staff



Joel Klein
Chancellor

Right-to-Know/Hazard Communication

Agenda

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

Rationale for the Right-to-Know laws

Employers are required to make sure that employees:

- understand the potential chemical hazards they may be exposed to
- know how to protect themselves against these hazards



History of the Right-to-Know laws

Prior to mid 1970's, there were no laws specifically guaranteeing employees the right to information concerning substances with which they worked.



History of the Right-to-Know laws

Workers did not have the right to know the chemical ingredients or their health effects.



Physicians received an average of less than 40 hours of training in occupational medicine.



Employees had rights to file workers' compensation cases but only after the damage to health had already occurred.



Highly Publicized Cases

- 1977 –Men working with Dibromochloropropane (DBCP) in a chemical plant in N. California noticed infertility amongst themselves



- Municipal workers were spraying a chemical out of a 55 gallon drum labeled "Lemon juice" to clean tiles in a tunnel.
 - The soles of their shoes came off after stepping in the chemical puddles.
 - Their hands and eyes burned after contact with the chemical.



Regulatory Structure

OSHA

Occupational Safety
and Health Administration

Federal Agency
US Department of Labor

Aims to ensure worker safety and health
in the U.S. by working with employers
to create better working environments

Private Employees

PESH

Public Employee
Safety and Health Bureau

State Agency
New York State Department of Labor

Oversees workplace protection of
public employees at the New York State
and New York City levels

Public Employees

The Right-to-Know Laws Provide Employees with Information About:

The chemical substances found in the workplace

The health risks associated with these exposures

The potential for occupational exposures

Ways to control overexposures

The hazards associated with these substances



The Right-to-Know Laws Were passed in the Mid 1980's

Two Laws Apply to NYC DOE Employees:

Hazard Communication
Standard

29 CFR 1910.1200



Enforced by:
NYS Dept. of Labor

New York State
Right-To-Know Law

12 NYCRR Part 820



Enforced by:
NYS Attorney General

Collectively, they provide the right to information
about chemical hazards on site

RTK Covers All Employees



Full time employees



Part-time employees



Provisional employees



Non-English speaking employees



What does Right-to-Know Cover?

Covers

- All hazardous substances
- Infectious Diseases
- Radiation

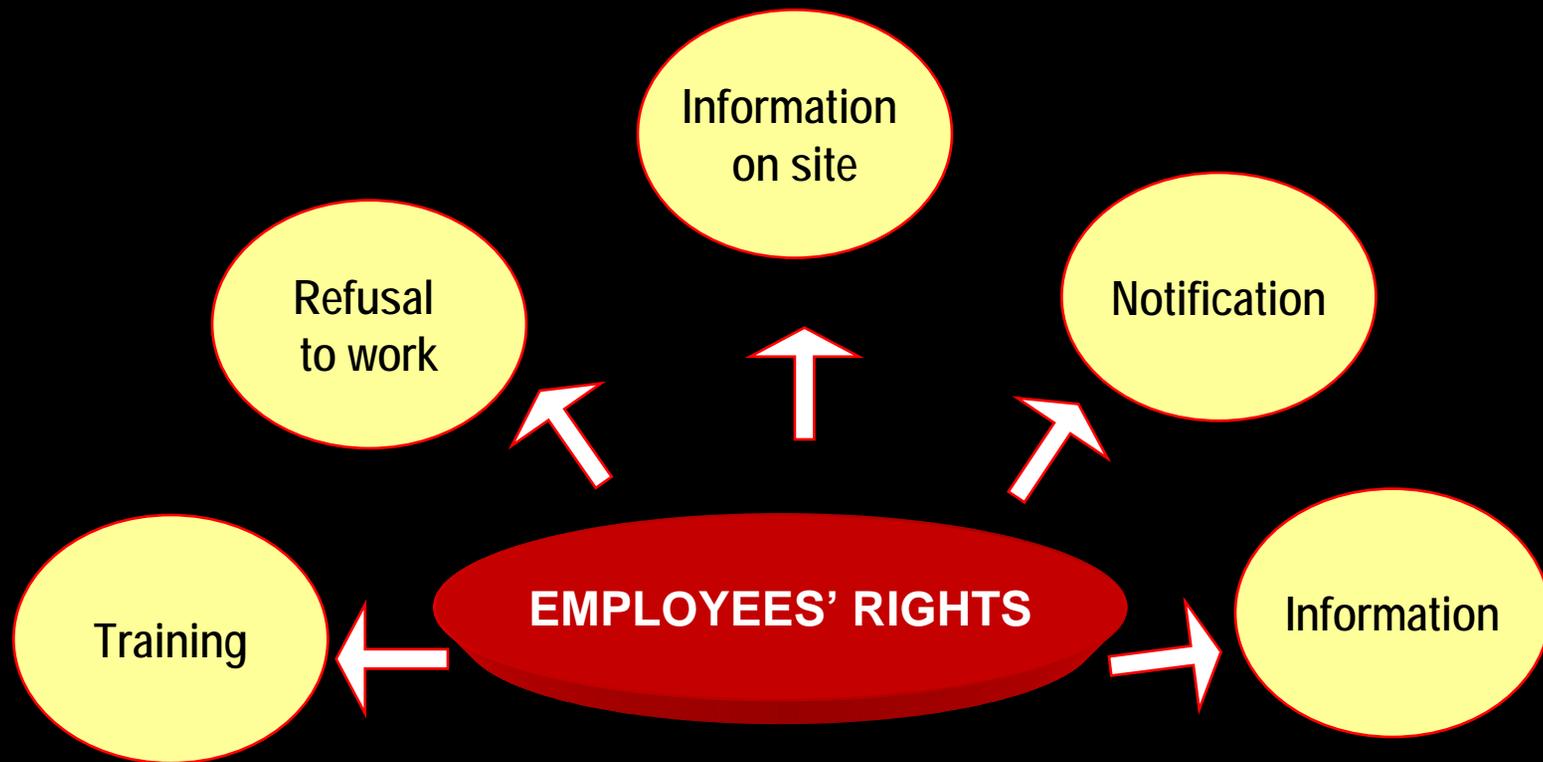
Does Not Cover:

- Physical Hazards (Noise)
- Safety Hazards (Electrical)

Covered under the General Duty Clause

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.



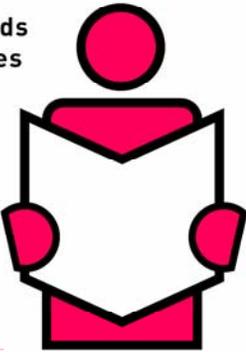
Notification Posters

Health & Safety Bulletin Board located in:

- The Main Office, or
- A conspicuous place

YOU HAVE A RIGHT TO KNOW!

Your employer must inform you of the health effects and hazards of toxic substances at your worksite.



Learn all you can about toxic substances on your job.

For more information, contact:

Name _____

Location & Phone Number _____

THE RIGHT TO KNOW LAW WORKS FOR YOU.
NEW YORK STATE DEPARTMENT OF HEALTH

NYS Right-to-Know Poster

Workforce New York Put us to work for you

STATE OF NEW YORK
DEPARTMENT OF LABOR

Labor Law Information Relating to
PUBLIC EMPLOYEES

job safety and health protection

ORDER TO COMPLY: If the OSHA Inspector or Designated Representative is satisfied that the employer complies with the requirements of the law, the OSHA Inspector or Designated Representative will issue a copy of this order to the employer. Each order will specify the period within which the violation must be corrected. If the violation continues uncorrected, an employer may be subject to certain penalties.

COMPLIANCE: If an employer is not in compliance with the law, the OSHA Inspector or Designated Representative will issue a copy of this order to the employer. Each order will specify the period within which the violation must be corrected. If the violation continues uncorrected, an employer may be subject to certain penalties.

EMPLOYER: The law requires that employers furnish employees a written copy of the OSHA 304 Hazardous Material Information for Emergency Responders (HMIS) form. The law also requires that employers provide a written copy of the OSHA 304 form to the employees.

EMPLOYER: The law requires that employers comply with all other health and safety standards and regulations issued under the law that apply to their activities and conditions on the job.

INSPECTION: The New York State Department of Labor (DOL) is responsible for administering and enforcing the law. The Department may issue subpoenas, conduct inspections, and take any other action necessary to enforce the law.

INVESTIGATION: The Department of Labor may investigate any complaint or report of a violation of the law. If the Department finds that there is a violation of the law, it may issue a citation and order for the employer to correct the violation.

VIOLATIONS: If an employer is found to be in violation of the law, the Department may issue a citation and order for the employer to correct the violation. If the employer fails to correct the violation, the Department may impose civil penalties.

APPEALS: If an employer is dissatisfied with a citation or order issued by the Department, the employer may file a written appeal with the Department within 30 days of the date of the citation or order.

FOR MORE INFORMATION: Additional information may be obtained from the nearest DOL/DISTRICT OFFICE listed below:

ALBANY 12242 New York State Capitol Tel: 518/487-3266	BINGHAMTON 13902 440 North St. Tel: 607/733-4221	BUFALO 14203 425 East State Tel: 716/855-3333	GARDEN CITY 11734 480 East State Street, 3rd Fl. Tel: 516/334-2476
NEW YORK CITY 10044-0400 117 Madison Street 101 Box 107 Tel: 212/312-8248	ROCKY HILL 10877 100 S. State Street Tel: 845/339-4576	SYRACUSE 13202 400 South Salina Street Tel: 315/479-1211	UTICA 13502 100 Exchange Street Tel: 518/787-5228
WATER PLAINS 10897 100 Exchange Street Tel: 518/787-5214			

George E. Preidt
Governor

Post Conspicuously

NYS Public Employees Job Safety and Health Protection (PEOSH) Poster

NYC
Department of Education
Chief of Staff
Charleston

Hazard Communication Standard & Right to Know Law

29 CFR 1910.1200



Each NYC DOE facility must comply with this law

For more information about the law, see below:

	Room	Floor
Principal's Name		
Site Administrator's Name		
Hazard Communication Plan		
Personal Protective Equipment		
Material Safety Data Sheets		
Chemical Inventory		
SH 900.1		
Hazard Communication/Right-to-Know Records		

Rev: 0305

Office of Occupational Safety and Health • 65 Court Street, Room 706 • Brooklyn, NY 11201 • (718) 655-2319

NYCDOE Right-to-Know/Hazard Communication Poster

Placement of Bulletin Board

In a location where all employees will have access to the information contained. Example:

- Main Office



Right to Information

About products used on the job:

• Name of substance	• Symptoms of effects
• Ingredients	• Flammability & reactivity
• Levels at which exposure is hazardous	• Emergency treatment
• Short and long term health effects	• Proper conditions for safe use
• Use of PPE/Controls	• Procedures for clean-up and spills

Information is provided through:

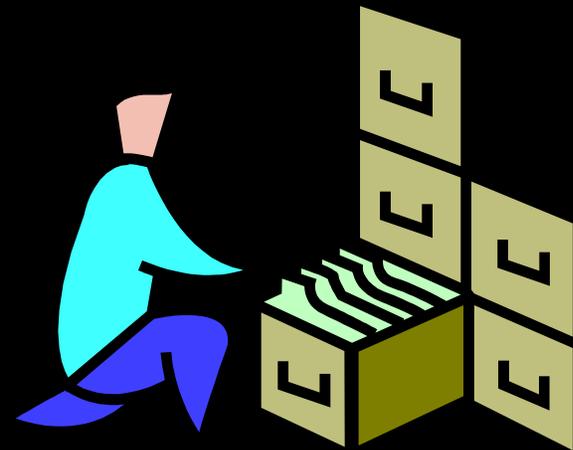
- Material Safety Data Sheets (MSDS)
- Fact Sheets

MSDSs must be readily accessible on-site to employees during their work shift

Right to Information On Site

MSDS and Fact sheets for all chemical and biological exposures must be readily accessible to workers on-site

Health and Safety Binder is located in the Main Office



Right to Refuse to Work

Employees have the right to refuse to work with a product if the MSDS or other appropriate information is not provided within 72 hours



Right to Training

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

- Initial hire
- Annually
- When new hazards are introduced



Employee Responsibilities

Employees must comply with all safety and health standards that apply to their actions and conduct on the job

Employees must use due care

Employer Responsibility



Recordkeeping

Employer must keep records of the names and social security numbers of workers exposed to 400 specific chemicals (Subpart Z list)

Records must be kept for 40 years

Training records must be kept for 3 years

*Located in
the Main Office*

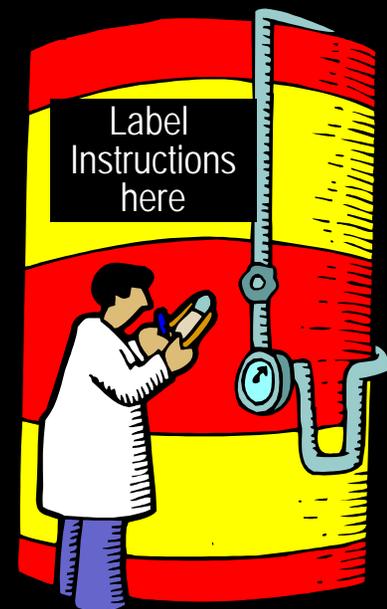
Container Labeling

- All chemical containers in the workplace must be labeled with:
 - The name of the ingredient
 - The manufacturer
 - The most immediate hazard warning
- Materials being decanted from a larger container must be labeled



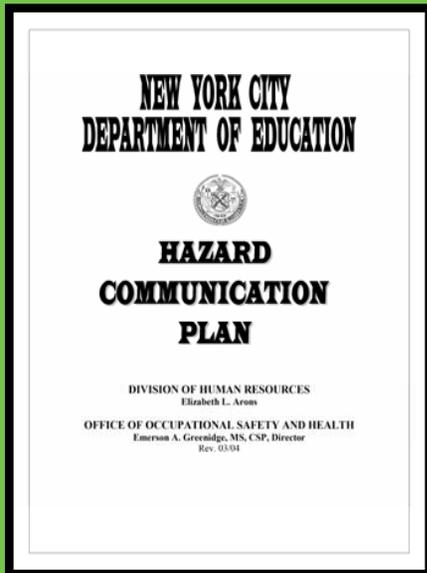
Labeling Exceptions

- **Transferred material**
 - Performed by the employee for the immediate use on that work shift
- **Inappropriate to label tanks or containers**
 - Use alternative means such as placards, batch tickets, operating instructions



Written Hazard Communication Program

See your supervisor
for the Written Plan



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 completed. It must include:

Description of the hazard determination procedures

Description of the labeling procedures

Description of the MSDS collection and review procedures

Description of employee information and training programs

Listing of all hazardous chemicals known to be present in the workplace

No Discrimination of Employees

Employees cannot be discriminated against for exercising their rights under the Right-to-Know law.

- Employees have 30 days of the alleged discrimination to file a complaint with PESH



Public Employee Rights

Outside the scope of RTK laws

Public Employees Must Have Access to:

**Results of any air-monitoring
conducted at the worksite**

**Their own medical records or
group results of medical screening
conducted by the employer**

**The Log and Summary of Work-Related
Illness and Injury forms (SH 900)**

**Copies of any citations received
from PESH for non-compliance with
safety and health regulations**

Work Related Injuries & Illnesses

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
- SH 900.2 – Injury and Illness Report



RECORDABLE INJURIES

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

SH900.1

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 (SH 900) 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.
STREET ADDRESS	
CITY, STATE, ZIP CODE	AVERAGE NUMBER OF EMPLOYEES
INDUSTRY DESCRIPTION (e.g. village fire department)	TOTAL HOURS WORKED BY ALL EMPLOYEES LAST YEAR
STANDARD INDUSTRIAL CLASSIFICATION (SIC), IF KNOWN	

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)	JOB TRANSFER OR RESTRICTION (Col. K)	INJURIES (Col. 1)
DAYS AWAY FROM WORK (Col. H)	AWAY FROM WORK (Col. L)	SKIN DISORDERS (Col. 2)
JOB TRANSFER OR RESTRICTION (Col. I)		RESPIRATORY CONDITIONS (Col. 3)
OTHER RECORDABLE CASES (Col. J)		POISONINGS (Col. 4)
		ALL OTHER ILLNESSES (Col. 5)

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 _____

The summary form SH 900.1 must be posted on the health and safety bulletin board:



Post from
February 1 until April 30

SH 900.1 - Summary of Work-Related Injuries and Illness

Need More Information?

- **Health and Safety Binder**

- Contains written HazCom Plan
- MSDS
- Right-to-Know Resource materials
- Located in the Custodian Engineer's Office

- **Health and Safety Bulletin Board**

- Notices and posters
- Located in a conspicuous place in your building



- **NYCDOE Intranet Website:**

- schools.nyc.gov/Offices/DHR/OSH
- OOSH bulletins
- UFT links
- CDC links
- PESH links
- Safety and Health recordkeeping forms



Toxicology

Definition



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



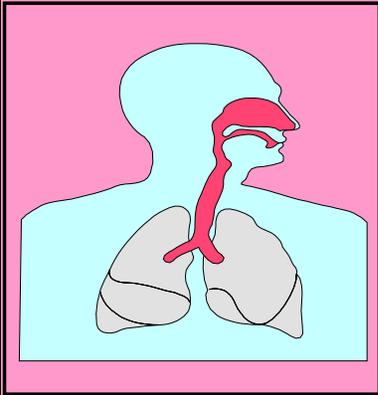
Chemicals



are part of everyday life



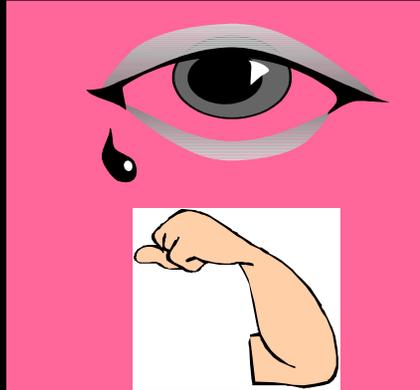
How do Chemicals Enter The Body?



Inhalation

You can breathe toxic dusts, gases, or fumes.

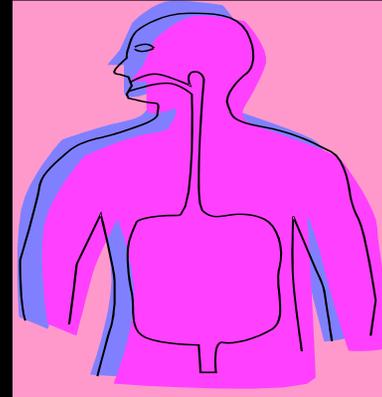
These can harm your respiratory system or pass from your lungs into your bloodstream and harm another part of your body.



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.



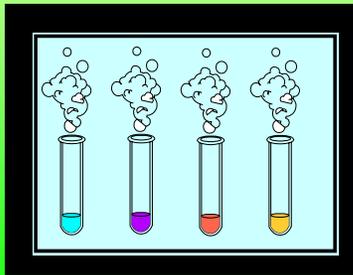
Injection

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

Physical Manifestations of Chemicals

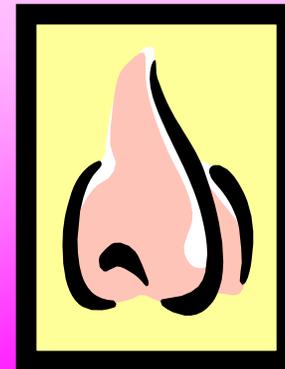
Vapors

- The gaseous form of substances that are normally in the solid or liquid state at room temperature.
- The vapor can be changed back to the solid or liquid state either by increasing or decreasing the temperature alone.
- Vapors can be inhaled



Gases

- Gases can be inhaled
- Some gases are:
 - easy to detect
 - some are odorless and colorless
 - some even deaden your sense of smell



Solids

- A solid is a material which retains its form, such as a stone.
- Most solids are generally not hazardous since they are not likely to be absorbed into the body.
- Examples of hazardous solids:
 - Moth balls – *inhalation hazard*
 - Rodent bait – *ingestion hazard*



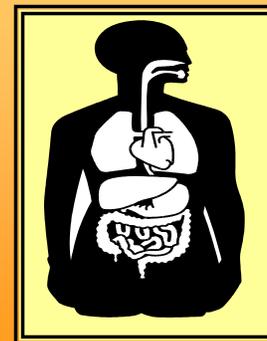
Dusts

- Dusts are tiny solid particles that can be inhaled.
- Larger dust particles are trapped in the mucous and hairs of the nose and windpipe.
- Smaller dust particles can be breathed deeply into the lungs.



Fumes

- Fumes are formed when a solid, especially metals are heated to very high temperatures and become vaporized.
 - Example: welding fumes
- Fumes can be inhaled.

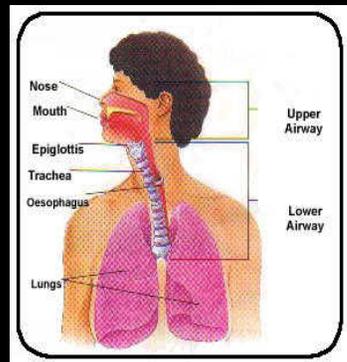


Basic Defense Mechanisms

The Respiratory System

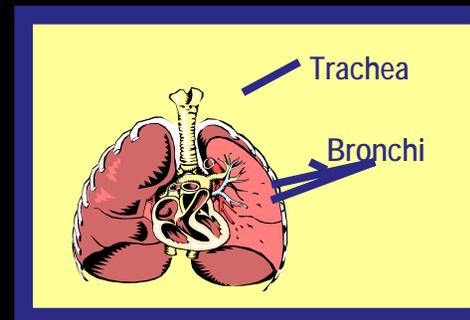
Upper Respiratory System

- Coughing
- Sneezing
- Nose hairs
- Mucous



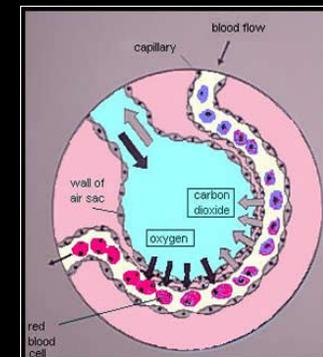
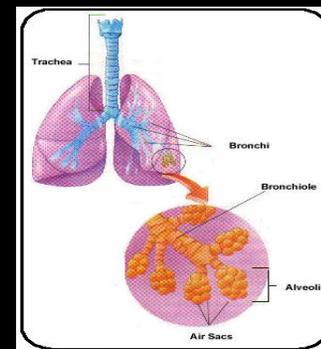
Lower Respiratory System

- Cilia
- Mucous
- Muco-cilliary escalator



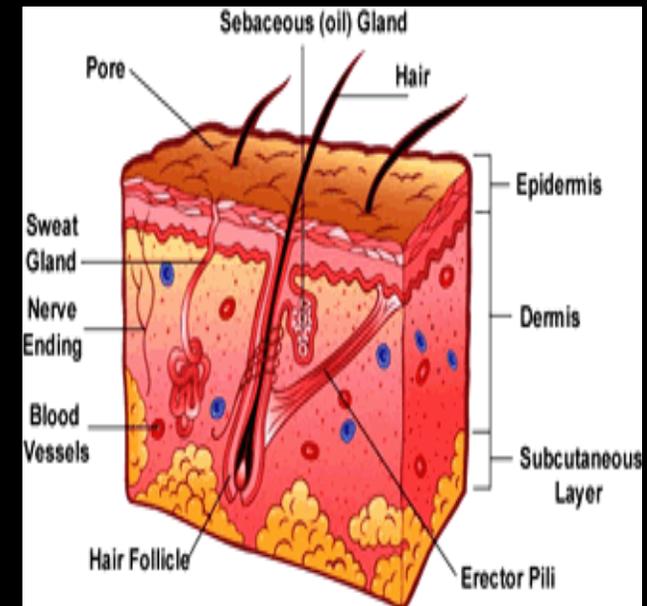
Alveoli Level

- Immune System
 - macrophages



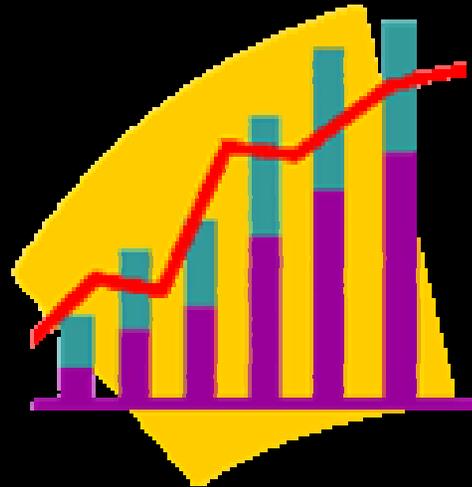
Skin

- 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



Types of Health Effects

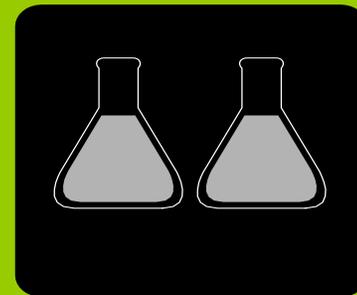
Sensitization

- This is another word for allergy
- Some people are allergic to a particular substance while others are not
- Allergic responses may not have an effect after the initial exposure, but later contact with the substance may cause an allergy to develop



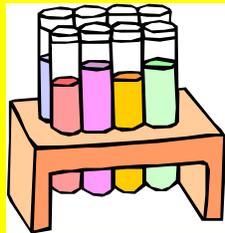
Synergistic

- Two or more agents that act together to produce a total effect greater than the sum of the separate effects.
- Example:
 - ethanol + chlorine = chloroform
 - ammonia + bleach = chlorine gas



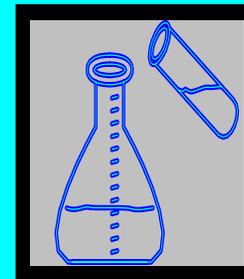
Additive

- The effects of multiple chemicals at a time or the effects of the different hazards may be additive.
- Examples:
 - $3 + 6 = 9$
 - Colorants-inorganic or organic matter to color compounds.



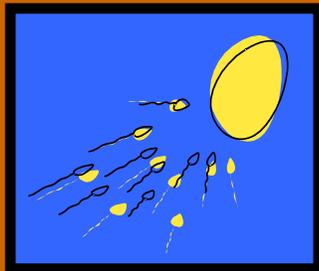
Antagonistic

- Interaction of two chemicals in which the resultant toxic effect is lower than the chemicals' individual actions.
- Example includes:
 - Methanol and ethanol exposure.



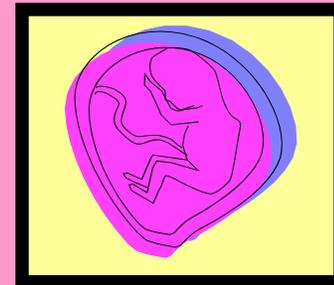
Mutagens

- Mutagens causes a change in the genetic make-up of a cell
- In reproductive cells (sperm or eggs), the mutagen can cause sterility or birth defects
 - Example: x-rays



Teratogens

- These substances cause malformations or birth defects by damaging the developing embryo
- Example: Thalidomide



Carcinogens

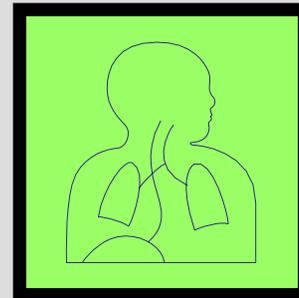
- Cancer causing agents
- A chemical is considered to be a carcinogen if it has been positively evaluated by:
 - International Agency for Research on Cancer (IARC),
 - Annual Report on Carcinogens, by the National Toxicology Program (NTP)
 - OSHA



Example: Asbestos

Target Organs

- The organ of the body most affected by the exposure to a particular substance.
- Target organs are body organs that are affected by exposure to hazardous chemical, physical, or biological agent.
- Example:
 - Mercury – neurological
 - Hepatitis - liver



Types of Target Organ Effects

HEPATOTOXINS	liver
NEPHROTOXINS	kidney
NEUROTOXINS	nervous system damage
PULMONARY	lung damage
HEMATOPOIETIC	blood system damage
REPRODUCTIVE TOXINS	reproductive system
CUTANEOUS HAZARDS	skin damage
OPTICAL HAZARDS	eye damage

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 Levels

An exposure limit published and enforced by OSHA as a legal standard

TLV - Threshold Limit Value

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

Odor

Not reliable as a warning clue

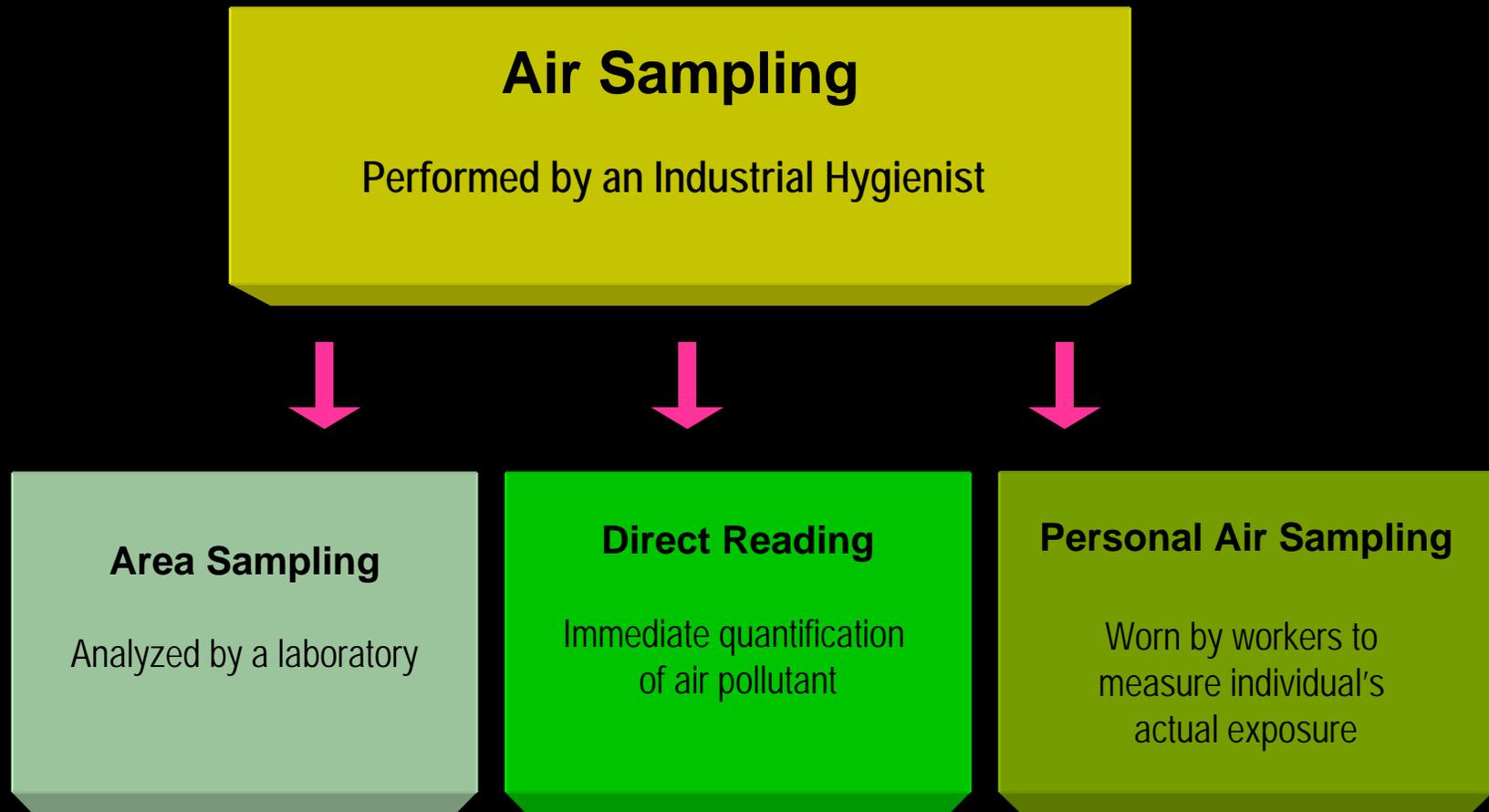
Settled Dust

Immediate symptoms

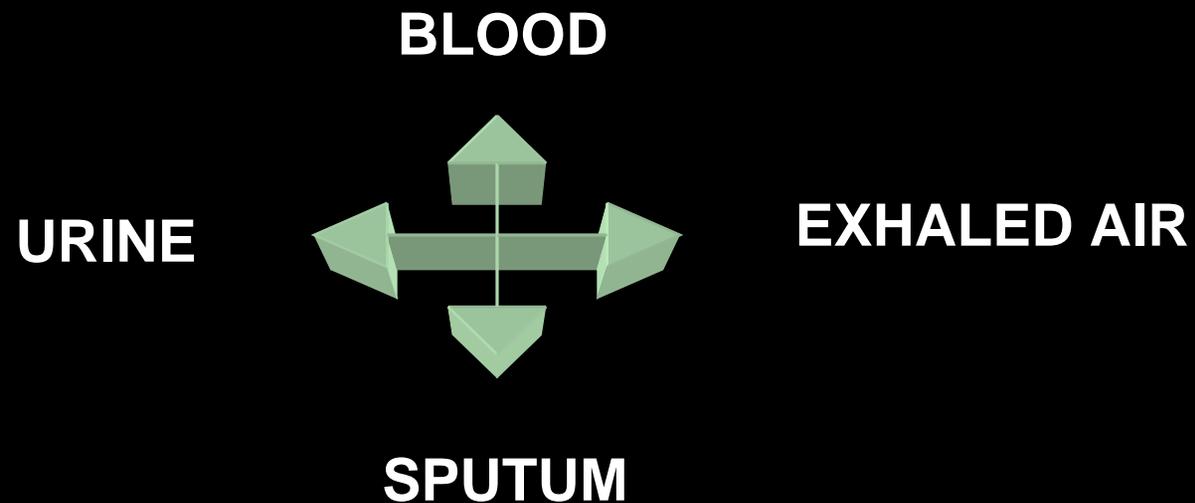
Particles in Nose

Taste

Environmental Monitoring



Biological Monitoring



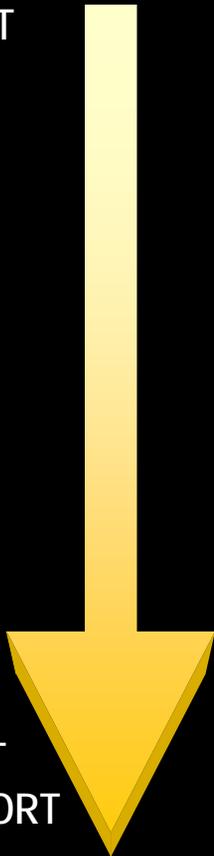
Chemical levels and/or its breakdown products are measured

Example: blood lead levels

Controlling Exposure

Methods of Controlling Exposure

BEST



LAST
RESORT

1

Engineering Controls

Remove the hazard at the source

2

Administrative Controls

Reduce exposure by changing job task or policies

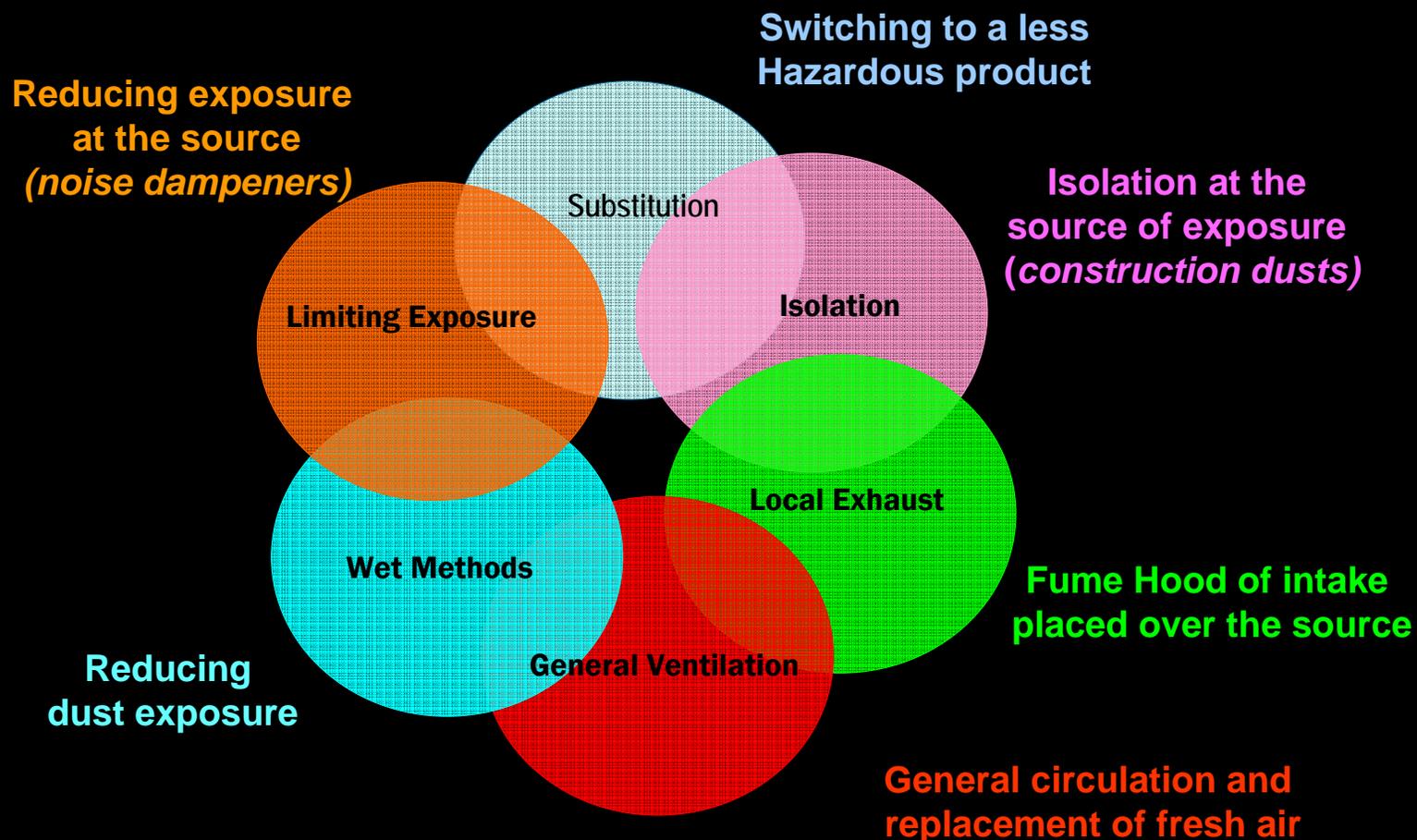
3

Personal Protective Equipment

Used after
Engineering & Administrative Controls have failed

Engineering Controls

Reduce the hazard at the source of exposure



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

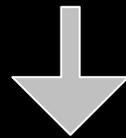
Establishing safety policies

Workplace hygiene

Proper waste disposal

Personal Protective Equipment (PPE)

Should be used when engineering controls are ineffective



Employees wear PPE to protect them from their environment

gloves



aprons



respirators



boots



Protective clothing



ear protection



goggles



Labels

Types of Labels

Manufacturer's Label

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



In-House Label

- Identity of the hazardous chemical
- Appropriate hazard warning

Signal Words



Danger/Poison

Highly Toxic

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



Warning

Moderately Toxic

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

The logo for the 'CAUTION' signal word, featuring the word 'CAUTION' in white capital letters inside a black oval, which is set against a white rectangular background.

Caution

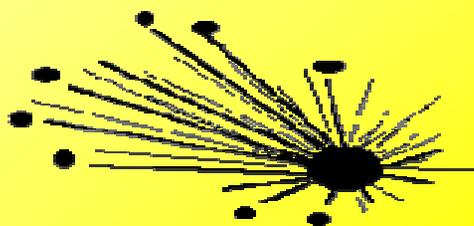
Slightly toxic to relatively nontoxic

Harmful if swallowed. An ounce to over a pint taken by mouth could kill an average sized adult.

Classification of Chemical Hazards



Flammable



Explosive



Oxidizer



Corrosive



Water Reactive



Toxic

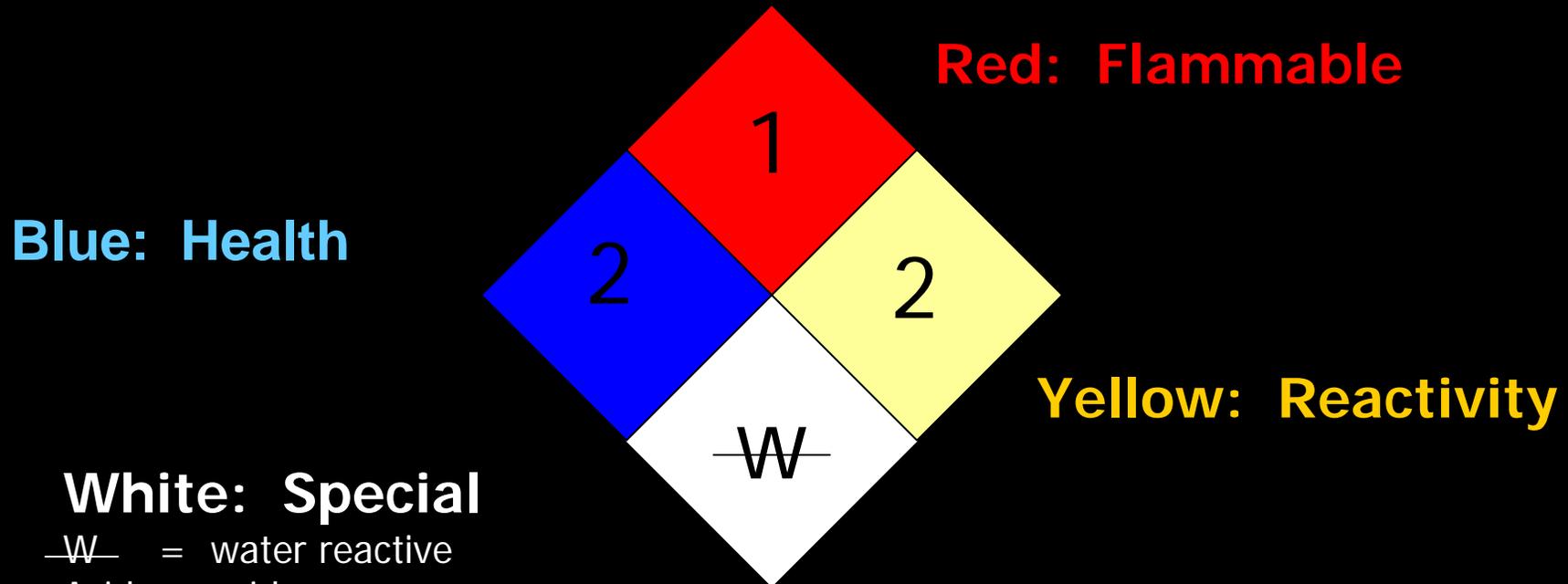


Radioactive



Carcinogenic

National Fire Protection Association - NFPA



White: Special

- ~~W~~ = water reactive
- Acid = acid
- Alk = alkali
- Cor = corrosive
- RAD = radiation
- Rad = radioactive
- CARC = carcinogen

KEY

- 0= Minimal Reactive Hazard
- 1= Slight
- 2= Moderate
- 3= High
- 4= Very High

Hazardous Materials Information System -HMIS

- Hazard ratings range from 0 to 4
- PPE Ranges from A through K

KEY

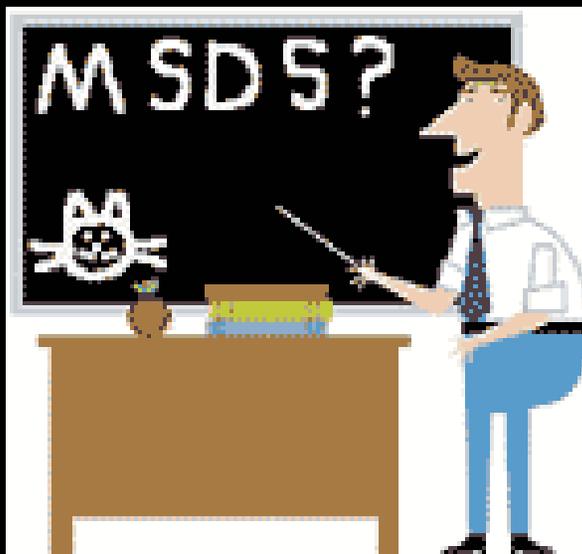
0= Minimal Reactive Hazard
1= Slight
2= Moderate
3= High
4= Very High

Cleaning Chemical X	
(BLUE) HEALTH	3
(RED) FLAMMABILITY	2
(YELLOW) REACTIVITY	1
(WHITE) PERSONAL PROTECTION	A

HMIS – Personal Protection Chart

A		Safety Glasses
B		Safety Glasses, Gloves
C		Safety Glasses, Gloves, Apron
D		Face Shield, Gloves, Apron
E		Safety Glasses, Gloves, Dust Respirator
F		Safety Glasses, Gloves, Apron, Dust Respirator
G		Safety Glasses, Gloves, Vapor Respirator
H		Goggles, Gloves, Apron, Vapor Respirator
I		Safety Glasses, Gloves, Dust/Vapor Respirator
J		Goggles, Gloves, Apron, Dust/Vapor Respirator
K		Supplied Air, Vapor-proof Suit, Gloves, Boots

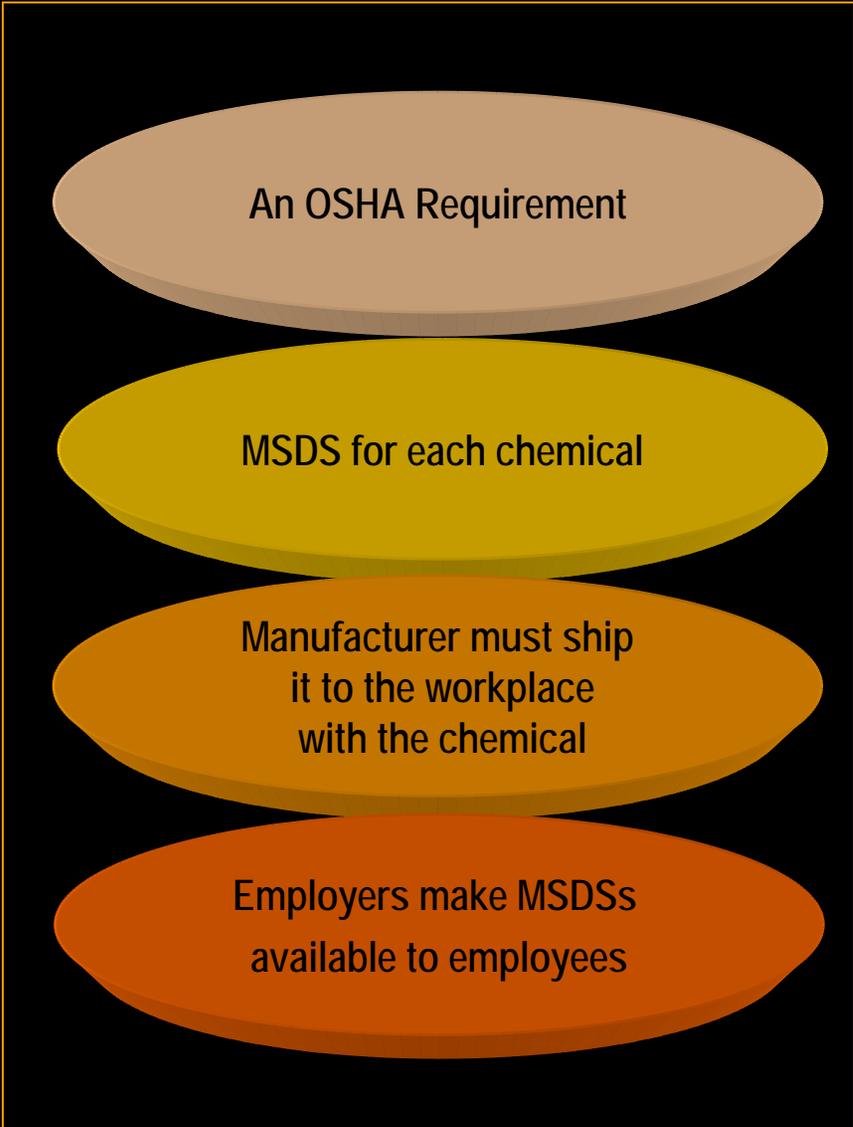
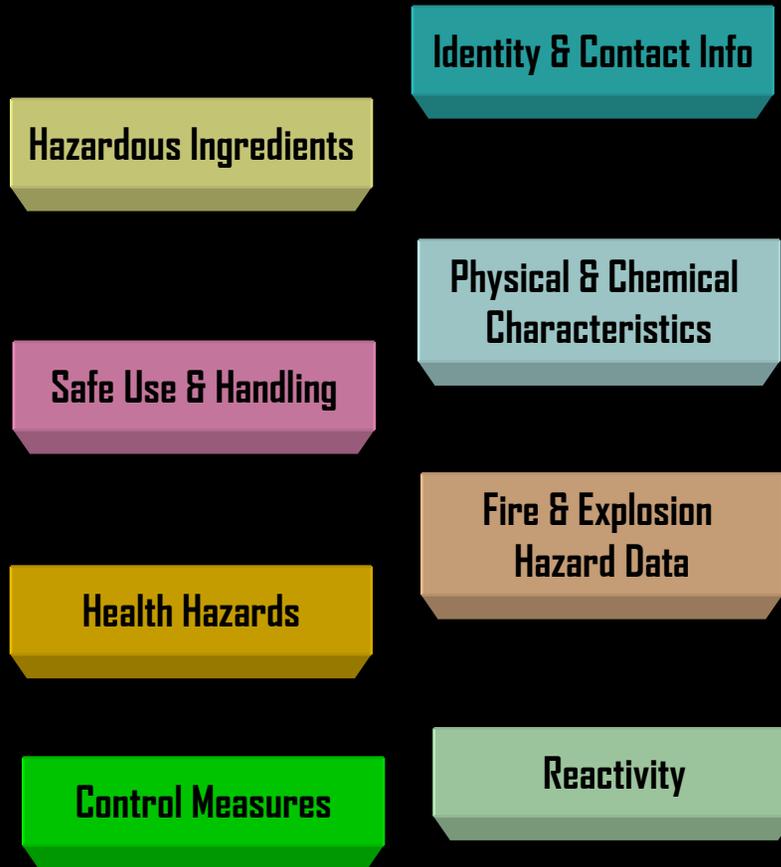
Material Safety Data Sheets (MSDS)



A document that describes everything that is known about a chemical

MSDS Facts

Must contain 8 required sections



Section I

- Identifies the material and manufacturer
- Emergency telephone number
- Information telephone number



The name on the MSDS
should match
the name on the container label

Section II

- Any hazardous ingredients chemicals in the product
- The % amount of the hazardous ingredients
- How much of the chemical is believed you can be safely exposed to over time
 - PEL – **Permissible Exposure Limit**
 - TLV – **threshold Limit Value**
- **Trade Secrets** –
MSDS doesn't have to identify the ingredients that are trade secrets, but must explain their hazards and safety measures.

Section 3 – Physical & Chemical Characteristics

Normal appearance & odor

So you can notice anything different

Physical State

Liquid or gas?

Vapor pressure & evaporation rate

The higher the pressure, the faster the chemical will evaporate and put vapors into the air

Vapor density

Air has a density of 1. Chemicals with a vapor density below 1 will rise into the air, those above 1 will sink

Solubility in Water

How much of a chemical will dissolve in water

Boiling, freezing, or melting points

The temperature at which a dangerous change can take place

ie. Change from Liquid to vapor

Specific gravity or density

Water has a density of 1.

Chemicals with a density below 1 will float on top of the water, and those above 1 will sink

Section 4 Fire & Explosion Hazard Data

- Contains Information needed for planning fire and explosion prevention, including:
 - **Flash point** – the lowest temperature at which the chemical gives off enough vapors to burn. The lower the flashpoint, the more flammable the substance
 - **Flammable Limits** – the range of concentration of a substance in the air within which a substance will catch fire.



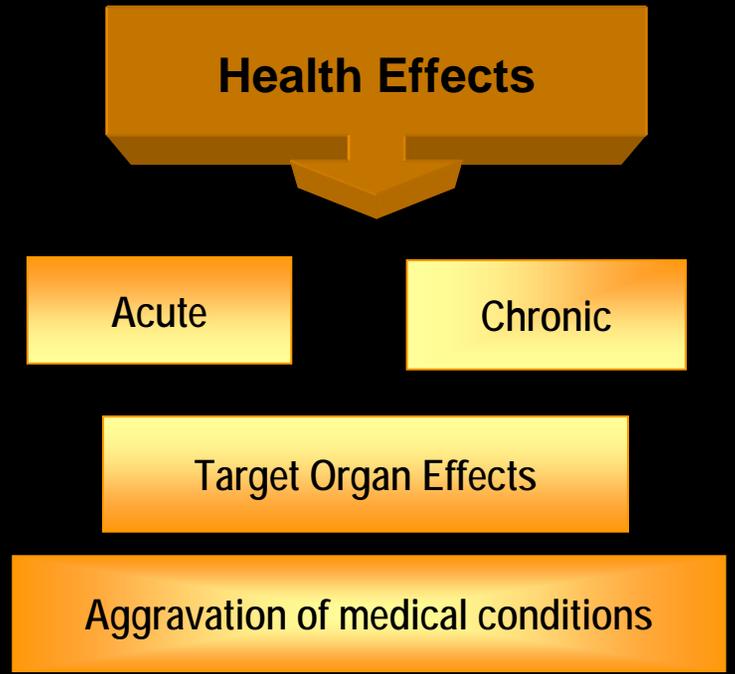
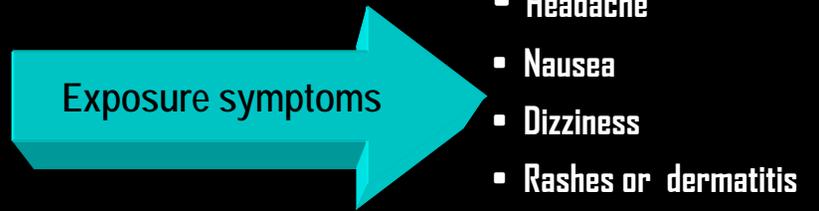
Section 5 Reactivity Data

- Chemicals react when mixed with other chemicals, exposed to heat, water or even air.
 - **Stability** – how well a chemical resists change i.e. heat
 - **Incompatibility** – what the chemical reacts dangerously with
 - **Hazardous decomposition or byproducts** – whether the chemical will create new hazards as it breaks down
 - **Hazardous polymerization** – ability of a substance to react with itself.



Section 6 – Health Effects

Make sure MSDSS are available to Emergency Responders



Section 7 Safe Handling and Use

Information on how to work safely with the chemical and prevent accidents

Handling

- Keep drums closed
- Do not stack
- Ground and bond containers when transferring

Storage

- Store in a cool dry place
- Keep away from heat, sunlight

Use

- Use in well ventilated areas
- Use only spark-proof tools

Section 8 Control Measures

Personal Protective Equipment (PPE) prevent your contact with hazardous substances

Eye & Face Protection

Goggles, Face shields

Skin Protection

Gloves, Suits

Respiratory Protection

Ventilation
Showering
Washing clothes

Exposure Control



The Clorox Company
1221 Broadway
Oakland, CA 94612
Tel. (510) 271-7000

Material Safety Data Sheet

I Product: CLOROX® PLUS™ HIGH EFFICIENCY BLEACH CLEANER											
Description: CLEAR ALKALINE LIQUID WITH A CHLORINE ODOR											
Other Designations	Distributor	Emergency Telephone Nos.									
Sodium Hypochlorite Bleach	Clorox Sales Company 1221 Broadway Oakland, CA 94612	For Medical Emergencies call: (800) 446-1014 For Transportation Emergencies, call Chemtrec: (800) 424-9300									
II Health Hazard Data		III Hazardous Ingredients									
<p>CORROSIVE to the eyes. Injures eyes, skin and mucous membranes on contact. Harmful if swallowed; nausea, vomiting, and burning sensation of the mouth and throat may occur. No adverse health effects are expected with recommended use. Occasional clinical reports suggest a low potential for sensitization upon exaggerated exposure to sodium hypochlorite. If skin damage (e.g. irritation) occurs during exposure. However, clinical tests conducted on intact skin using a product similar to Clorox® High Efficiency Bleach Cleaner found no sensitization in the test subjects.</p> <p>Although not expected, heart conditions or chronic respiratory problems such as asthma, chronic bronchitis or obstructive lung disease may be aggravated by exposure to high concentrations of vapor or mist.</p> <p>FIRST AID:</p> <p>EYE CONTACT: Immediately flush eyes with water for 15 minutes. If irritation persists, call a doctor.</p> <p>SKIN CONTACT: Remove contaminated clothing. Flush skin with water. If irritation persists, call a doctor.</p> <p>INGESTION: Drink a glassful of water. DO NOT induce vomiting. Immediately contact a doctor or poison control center.</p> <p>INHALATION: Remove from exposure to fresh air. If breathing problems develop, call a doctor.</p>		<table border="1"> <thead> <tr> <th>Ingredient</th> <th>Concentration</th> <th>Worker Exposure Limit</th> </tr> </thead> <tbody> <tr> <td>Sodium hypochlorite CAS # 7681-52-9</td> <td>5-10%</td> <td>not established</td> </tr> <tr> <td>Sodium hydroxide CAS # 1310-73-2</td> <td>0.1-1%</td> <td>2 mg/m³ - TLV-C^a 2 mg/m³ - PEL-TWA^b</td> </tr> </tbody> </table> <p>^aTLV-C = ACGIH Threshold Limit Value - Ceiling</p> <p>^bPEL-TWA = OSHA Permissible Exposure Limit - Time Weighted Average/Short Term Exposure Limit</p> <p>None of the ingredients in this product are on the IARC, OSHA or NTP carcinogen lists.</p>	Ingredient	Concentration	Worker Exposure Limit	Sodium hypochlorite CAS # 7681-52-9	5-10%	not established	Sodium hydroxide CAS # 1310-73-2	0.1-1%	2 mg/m ³ - TLV-C ^a 2 mg/m ³ - PEL-TWA ^b
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IV Special Protection and Precautions		V Transportation and Regulatory Data									
<p>Hygienic Practices: Wash hands after direct contact. Do not wear product-contaminated clothing for prolonged periods.</p> <p>Engineering Controls: Use local exhaust to minimize exposure to product vapor or mist.</p> <p>Personal Protective Equipment: Wear safety glasses. Wear rubber or neoprene gloves if there is the potential for repeated or prolonged skin contact. In situations where exposure limits may be exceeded, a NIOSH-approved respirator is advised.</p>		<p>DOT: Not restricted per 49 CFR 172.101(c)(12)(iv).</p> <p>IMDG: Not restricted per IMDG Code Page 0021 Paragraph 5.3.5.</p> <p>IATA: Not restricted per IATA D.G.R. Special Provision A3.</p> <p>EPA - SARA TITLE III/CERCLA: This product is regulated under Sections 311/312 and contains no chemicals reportable under Section 313. This product does contain chemicals (sodium hydroxide and sodium hypochlorite) that are regulated under Section 304/CERCLA.</p> <p>TSCA/DSL STATUS: All components of this product are on the U.S. TSCA Inventory and Canadian DSL.</p>									
VI Spill Procedures/Waste Disposal		VII Reactivity Data									
<p>Spill Procedures: Absorb and containize. Wash residual down to sanitary sewer. Contact the sanitary treatment facility in advance to assure ability to process washed-down material. For spills of multiple products, responders should evaluate the MSDS's of the products for incompatibility with sodium hypochlorite. Breathing protection should be worn in enclosed, and/or poorly ventilated areas until hazard assessment is complete.</p> <p>Waste Disposal: Dispose must be made in accordance with applicable federal, state and local regulations.</p>		<p>Stable under normal use and storage conditions. Reacts with other household chemicals such as toilet bowl cleaners, rust removers, acids or ammonia containing products to produce hazardous gases, such as chlorine and other chlorinated species. Prolonged contact with metals may cause pitting or discoloration.</p>									
VIII Fire and Explosion Data		IX Physical Data									
<p>Not flammable or explosive.</p>		<p>pH..... ~13.2</p> <p>Specific gravity (H₂O=1)..... 1.08 - 1.11</p> <p>Solubility in water..... Complete</p>									

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DATA SUPPLIED IS FOR USE ONLY IN CONNECTION WITH OCCUPATIONAL SAFETY AND HEALTH DATE PREPARED 7/07

MSDS for Bleach

How You Can Get A MSDS

Material Safety Data Sheets must be obtained by your employer from the manufacturer

Methods:

- Internet-Company Website
- E Mail
- Phone/Fax
- In writing by mail

- MSDS must be obtained by your employer from the manufacturer, via:
 - Email
 - Phone/Fax
 - Mail
 - Internet/company web site

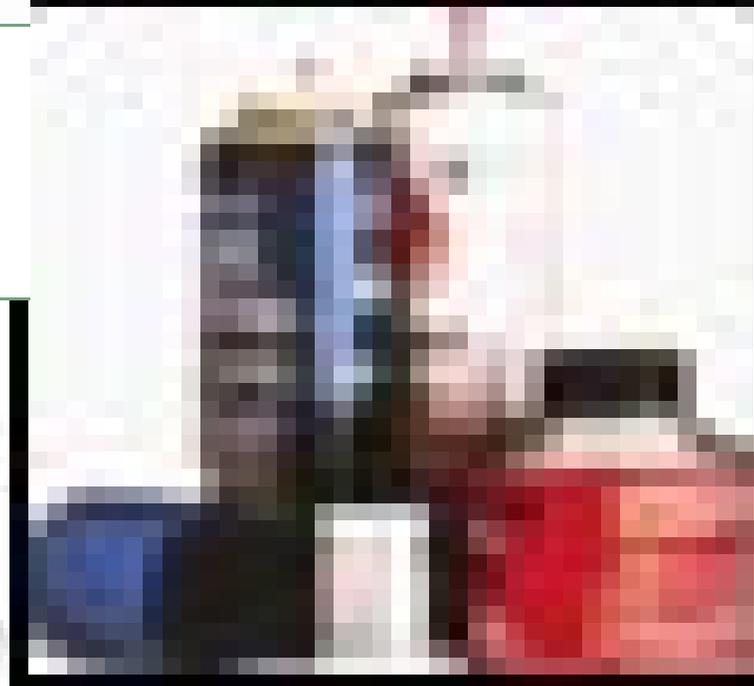
Common Workplace Chemicals

Chemical Exposures of School Staff

- Solvents
- Dusts
- Gases



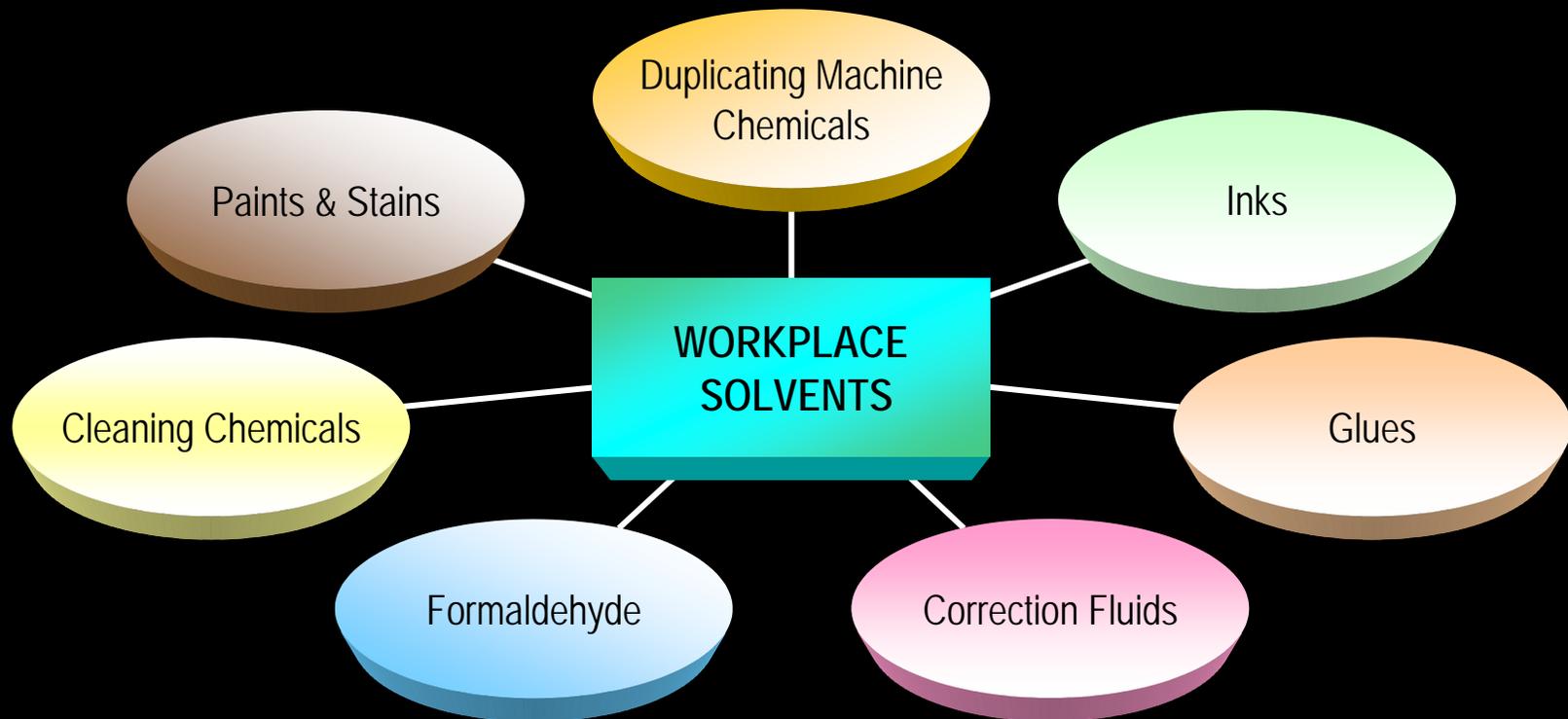
Solvents



What is a Solvent?

Chemicals which dissolve other materials

Example: water is a solvent for soap



Inhalation of Solvents

- Evaporation of chemicals release vapors
- Vapors enter the lungs, are carried by the bloodstream to organs of the body
- Also true for odorless substances
- A solvent's volatility and evaporation rate determines how quickly it will evaporate.

ACUTE HEALTH EFFECTS

Central nervous system effects

Dizziness

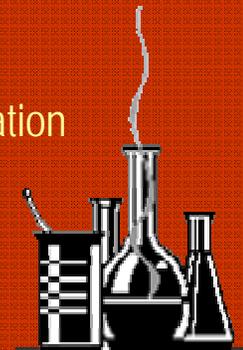
Light-headedness

Depression

Nausea

Headache

Respiratory irritation

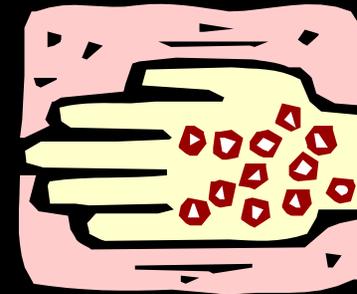


Skin Contact with Solvents

- 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

ACUTE HEALTH EFFECTS

Drying of skin



CHRONIC HEALTH EFFECTS

Red, inflamed, thick, dry skin
Allergic skin reactions

Ingestion of Solvents

- Deliberate and direct ingestion of chemicals is unlikely in workplace
- Indirect means most likely:
 - Unwashed hands
 - Eating or drinking in the workplace where chemicals are being used
 - Mists or droplets can contaminate food
- Ingestion can cause irritation of the gastro-intestinal tract

ACUTE HEALTH EFFECTS

- Abdominal cramps
- Nausea
- Diarrhea



Acute Health Effects of Solvents

- If symptoms are experienced,
 - remove victim from the source of exposure
 - Relief should be rapid
- If symptoms occur frequently,
 - better ventilation and changes in work practices need to be examined.



Chronic Health Effects of Solvents

- Nervous System Effects
 - Permanent memory changes
 - Lack of coordination and behavior
 - anxiety
 - burst of perspiration
 - loss of balance
 - sudden mood swings
 - diarrhea
 - sexual impotence
 - chronic fatigue
 - Long term damage in extremities
 - n-hexane, methyl-n-butyl keto.



Individual MSDSs need to be consulted
for specific health information

Duplicating Machine Chemicals: Toners

- Consists of fine black powders made from carbon black and polymer resins
- In sufficient quantities, can cause sneezing, coughing, nose and throat irritation
- If dusts are richly dispersed in the air, it may be explosive



- Self contained cartridges have dramatically reduced exposure
- Wash hands after contact
- Use wet methods to clean up spills

Glues

- Largely solvent based
- Causes central nervous system effects
- Crazy glue will bond to skin immediately. May cause:
 - Redness, irritation, and tearing
- Solvent-based glues can be flammable



Inks

- Sources:
 - Pens, stamp pads, mimeograph paste, markers, dry erase markers
- Most inks are considered to be non-toxic by manufacturers
- Some are solvent based
 - May affect the central nervous system



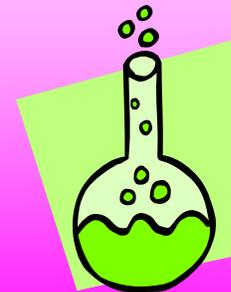
Correction Fluid

- Many types:
 - Water based
 - Solvent based
- Can be flammable



Formaldehyde

- A chemical preservative
- Found in:
 - new furniture
 - carpets
 - carbonless paper
 - laboratories
- In excess, vapors have been known to cause cancer
- Exposures of pedagogical staff are not expected to reach these levels



Cleaning Chemicals

- Largely solvent based
- Can be corrosive in nature
- May have reactive effects if mixed or stored incorrectly
- Industrial strength chemicals used when the building is not in use
 - chemicals evaporate before reoccupation of building



Wall Paint

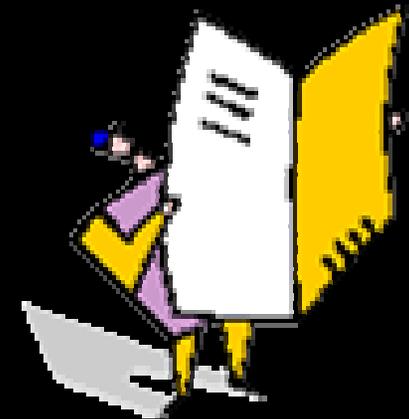
- Made of thinners, binders, pigments
- Solvents used in paints are designed to evaporate so the paint can dry
- Inhalation of paint vapors may cause:
 - burning and irritated eyes, headaches, dizziness, nausea and vomiting



Precautions & Safe Work Practices

Precautions and Safe work Practices

- Read the label and MSDS prior to using product
- Follow the manufacturer's recommendations and directions
- Wash hands after using chemicals and prior to eating
- Flush eyes and/or skin with water after contact with chemicals



Precautions and Safe work Practices

- Do not leave bottles/containers uncapped
- Ensure all chemical containers are appropriately labeled
- Do not reuse empty chemical bottles/containers
- Never eat or drink while using chemicals
- If symptoms occur, remove the victim to fresh air



Dust Hazards

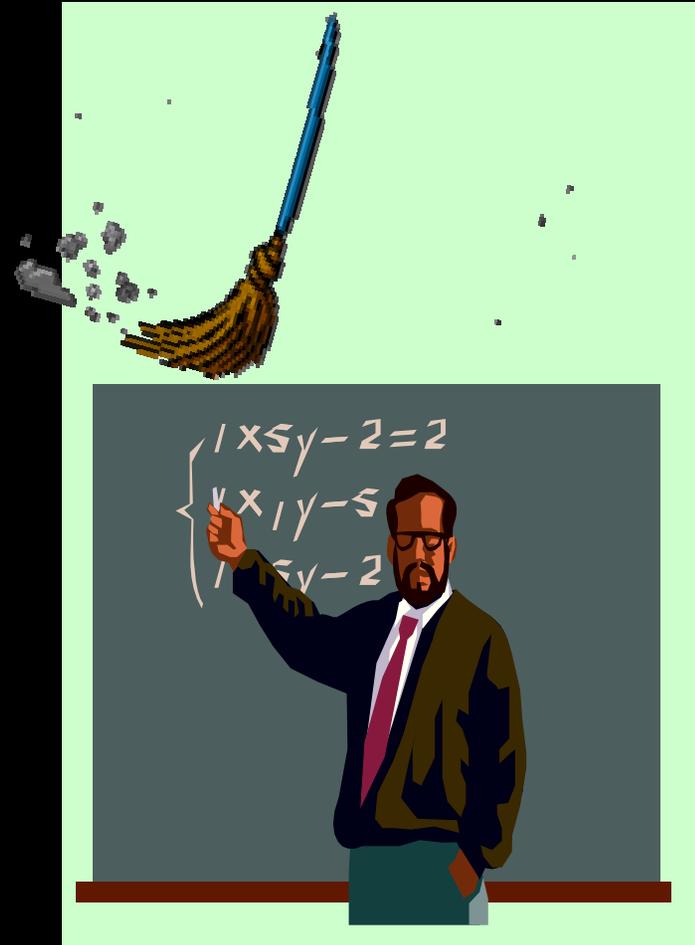
Dusts

- Present in air we breath
- Solid materials that have been crushed, ground, drilled or scraped
- Include:
 - Fumes – solids especially metals heated to high temperatures e.g. Welding
 - Fibers – the degree of hazard depends on the fiber size



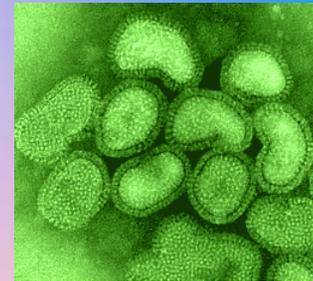
Sources of Dusts in School Settings

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

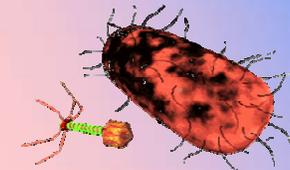


Bacterial & Fungal Infections

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



Influenza Virus



Bacteria & virus

Acute Health Effects of Nuisance Dusts

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



Dusts in the nose & bronchi:

- Irritation
- Can lead to rhinitis & bronchitis

- **Nuisance Dusts increase occupant discomfort**
- **Often mistaken for hazardous substances - asbestos**

Boiler Gases

SULFUR DIOXIDE

Burning tar smell

- Intensely irritating to eyes and respiratory tract causing burning of the eyes and tearing, coughing, and chest tightness.
- It may cause severe breathing difficulties

CARBON DIOXIDE

Odorless, but sour taste

May cause rapid breathing, rapid beating of the heart, headache, sweating, shortness of breath, dizziness, mental depression, visual disturbances, shaking, unconsciousness and death



HYDROGEN SULFIDE

Rotten egg smell

- Can temporarily deaden the sense of smell, and irritate the eyes, nose or throat
- Low concentrations may cause headache, dizziness, and upset stomach.
- High concentrations may cause loss of consciousness and death.

CARBON MONOXIDE

Odorless, colorless, tasteless

- Decreases the ability of the blood to carry oxygen to the tissues.
- May cause headache, nausea, dizziness, weakness, rapid breathing, unconsciousness and death.
- May aggravate heart disease and artery disease

The End