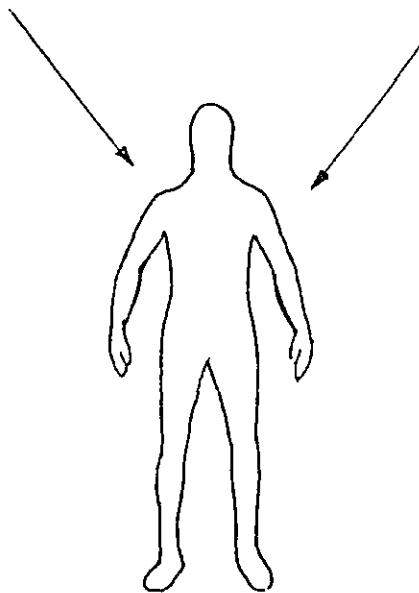


BIOMODES OF ENTRYCHEMICAL AGENTS

GASES
VAPORS
DUSTS
FUMES
MISTS
FIBERS

PHYSICAL AGENTS

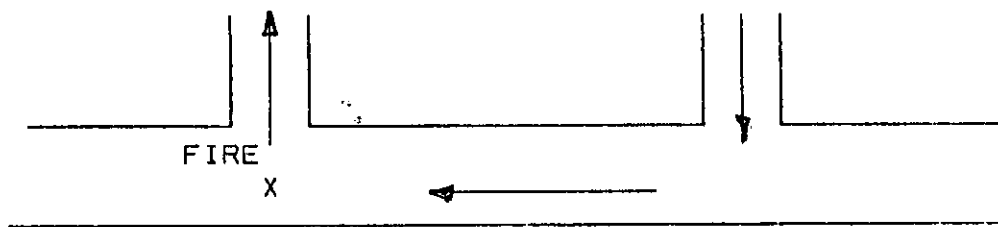
HEAT
NOISE
IONIZING RADIATION
NON-IONIZING RADIATION

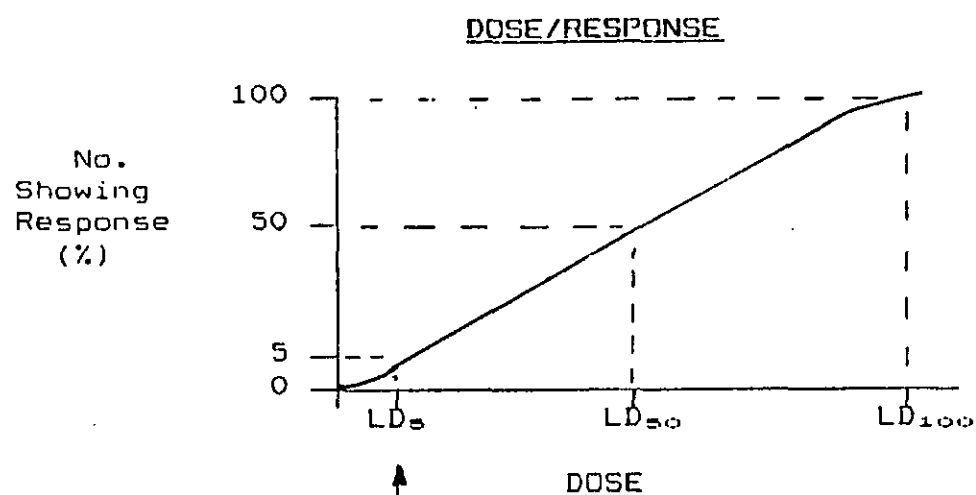
STATES OF MATTER

- SOLID - A substance that does not flow perceptibly under moderate stress.
- LIQUID - A fluid (flowing material) but without the tendency to separate.
- GAS - A fluid that tends to expand indefinitely.
- PLASMA - A collection of charged particles which has some of the properties of a gas, but is a good conductor of electricity and is effected by a magnetic field.

CHEMICAL AGENTS

- GAS** - A fluid that tends to expand indefinitely.
- Examples: Oxygen
Nitrogen
Hydrogen
Vinyl Chloride Monomer
- VAPOR** - A gas that originated from a material that is normally a liquid.
- Examples: Water vapor
Gasoline vapor
Plasticizer vapor
- DUST** - Finely divided solids, normally capable of being suspended in air.
- Examples: Talcum powder
Lead carbonate
PVC resin "fines"
- FUME** - Small particles of a metallic oxide which originate from heating metals to the boiling point in the presence of oxygen.
- Examples: Welding fumes
Lead fumes
- SMOKE** - Particles resulting from incomplete combustion.
- Examples: Tobacco smoke
Gasoline smoke
Smoke from "burning out" PVC-contaminated pipes
- MIST** - A suspension of small droplets of liquid in air.
- Examples: Hair sprays
Fog (as on a "foggy day")
- FIBER** - Any relatively small solid that is at least three times as long as it is wide.
- Examples: Fiber Glass insulation
Asbestos insulation
Cotton fiber
Wool





"THRESHOLD" - There appears to be one for each chemical.

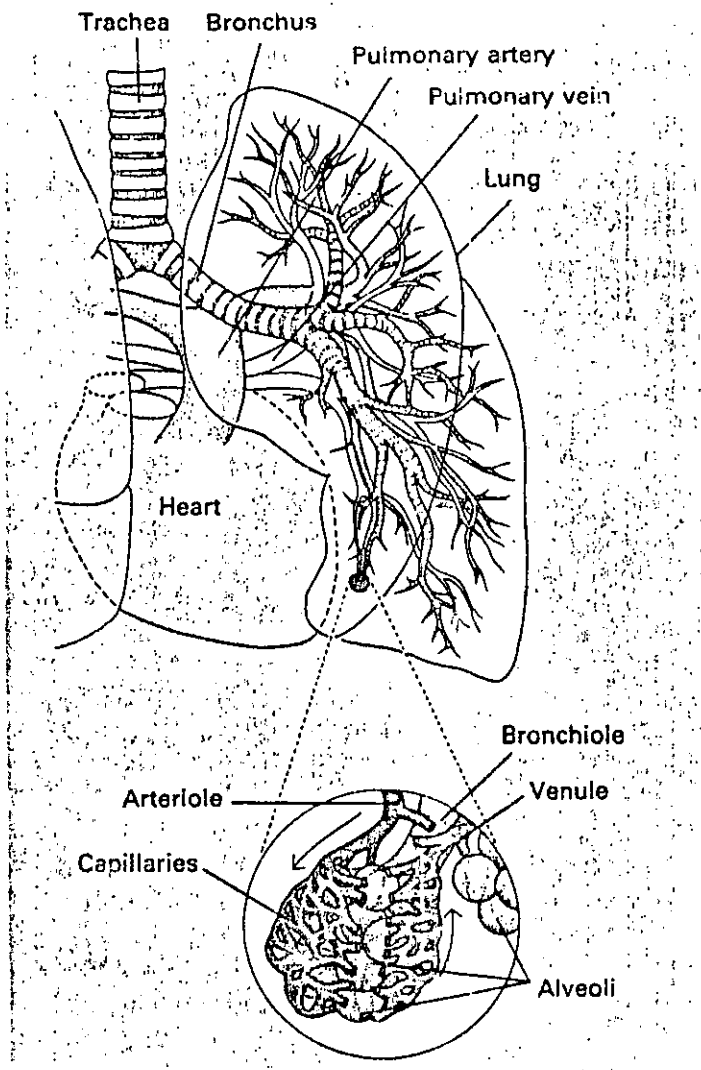
BIOMODES

INHALATION

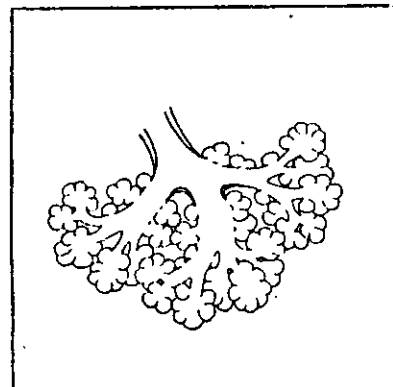
INGESTION

EYE AND SKIN CONTACT

INJECTION



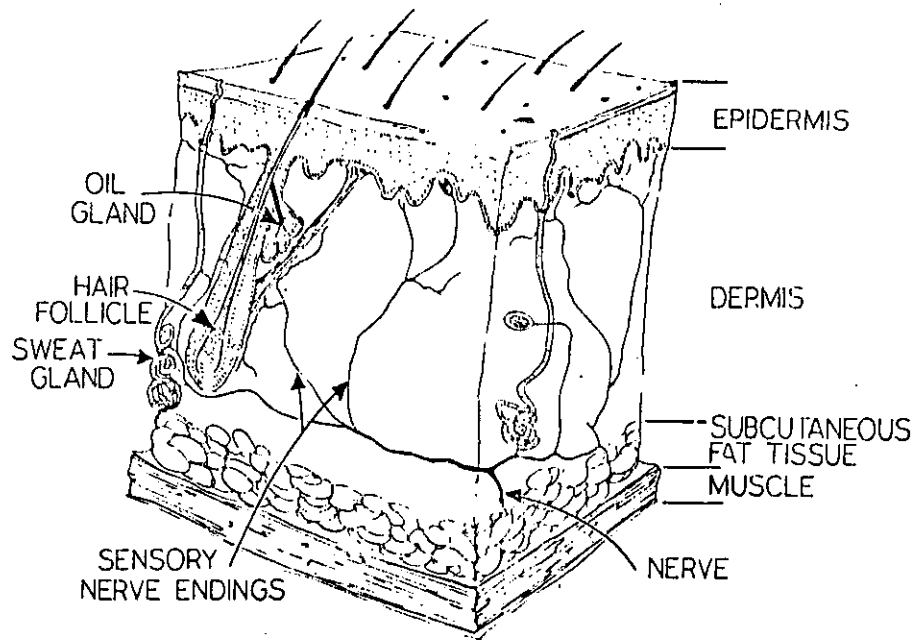
The Secondary Lobule

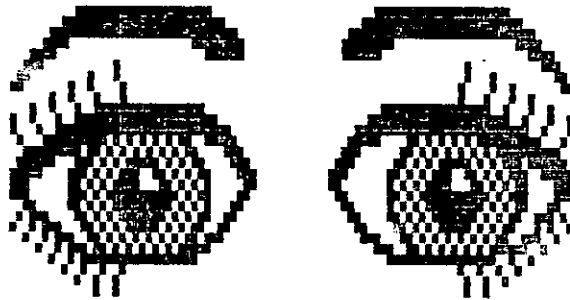


RESPIRATORS

Air-Purifying Respirators - Remove contaminants
from surrounding air.

Air-Supplied Respirators - Provide user with a
source of uncontaminated
air from a location other
than the surroundings.





USE EYE PROTECTION

USE SKIN PROTECTION

USE RESPIRATORS

VCM PROPERTIES

NORMALLY A GAS

- ODORLESS**
- COLORLESS**

A LIQUID UNDER PRESSURE

VCM HAZARDS

FIRE

AOL

FROST BITE

INHALATION

LIVER CANCER

CHROMOSOME DAMAGE

VCM HEALTH GOALS

**KEEP EXPOSURES AS LOW
AS POSSIBLE**

VCM SAFE LIMITS

1 PPM (8-HOUR TWA)

5 PPM (ANY 15 MINUTES)

VCM LEAKS

NO LEAK IS ACCEPTABLE

INDICATORS OF LEAKS:

- ICING**
- HISSING NOISES**
- CONDENSATION**
- ODOR**
- MEASUREMENT**

RESPIRATOR USE - VCM

1000 PPM OR LESS

- USE AIR LINE RESPIRATOR

ABOVE 1000 PPM

OR UNKNOWN

- USE SCOTT AIR PAK

PROTECTIVE CLOTHING

DEPENDS ON JOB

MAY INCLUDE:

- CLOTH GLOVES**
- RUBBER GLOVES**
- AIR-LINE RESPIRATOR**
- SCOTT AIR-PAK**
- BULLARD RESPIRATOR**
- DISPOSABLE COVERALLS**
- FACE SHIELD**

EMERGENCIES

BE PREPARED!

**GO TO YOUR EMERGENCY
POST WHEN ALERTED**

VCM MONITORING

AREA

- HONEYWELLS
- HNU

PERSONAL EXPOSURE

- REAL MINIMONITOR
 - WEAR AS INTENDED
 - FILL OUT CARD

MEDICAL TESTING

**TO DETECT MEDICALLY
SIGNIFICANT PROBLEMS
RELATED TO VCM OR
OTHER CHEMICALS**

**TAKE ADVANTAGE OF THE
PROGRAM. PARTICIPATE!**

RECORDS

MONITORING - 30 YEARS

**MEDICAL - LENGTH OF
EMPLOYMENT + 30 YEARS**

LEAD PROPERTIES AND USE

APPEARANCE

- FINE, LIGHT-COLORED POWDERS
- HARD TO DISTINGUISH BETWEEN LEAD AND OTHER HARMLESS MATERIALS

USE

- COMPOUND LUBRICANTS/
HEAT STABILIZERS

LEAD HEALTH PROBLEMS

NERVOUS SYSTEM

REPRODUCTIVE SYSTEM

BLOOD SYSTEM

KIDNEYS

LEAD POISONING SIGNS

STOMACH PAINS

LOSS OF APPETITE

NAUSEA

METTALLIC TASTE

CONSTIPATION

FATIGUE

TREMORS

IRRATIONAL BEHAVIOR

INSOMNIA

CONVULSIONS

HEADACHES

SAFE LIMITS - LEAD

DEPENDS ON WORK TIME:

50 MICROGRAMS (8-HRS)

40 MICROGRAMS (10-HRS)

33.3 MICROGRAMS (12-HRS)

30.8 MICROGRAMS (13-HRS)

RESPIRATORS

**3M AIRHATS REQUIRED FOR
CERTAIN JOBS**

CHECK AIRFLOW EACH SHIFT

**TURN IN FOR CLEANING AND
REPAIR, PER PROCEDURES**

DUST CONTROL

**KEEP ALL VENT HOODS AND
EXHAUST FANS ON**

AVOID CRUSHING OF BAGS

**USE VACUUM FOR CLEANING
- COMPRESSED AIR IS
ILLEGAL!**

PERSONAL HYGIENE

**WASH HANDS, ARMS, FACE
BEFORE EATING, DRINKING,
SMOKING, USING COSMETICS**

**DON'T TAKE FOOD, DRINK,
TOBACCO INTO LEAD AREAS**

HEARING LOSS

CANNOT BE REPAIRED

CAN HAPPEN TO ANYONE

A NATURAL PART OF AGING

- DEPENDS ON VARIETY OF

HEALTH EFFECTS

HASTENED BY OVEREXPOSURE

PLANT NOISE

EXAMPLES OF HIGH NOISE

VINYL - FLUID BED DRYER

COMPOUND - LINE 3

MAINTENANCE - BOILERS

GENERAL - FIRE PUMPS

CAN OCCUR ANYWHERE

GRINDING WORK

CONCRETE CHIPPING

STEAM LEAKS

ETC.

SAFE LIMITS - NOISE

BASIC LIMIT

- 90 DBA (8-HR TWA)**
- 87 DBA (12-HR TWA)**

**THE HIGHER THE NOISE, THE
LESS TIME IS REQUIRED TO
CAUSE HARM**

PREVENT HEARING LOSS

BE ALERT FOR HIGH NOISE

- SIGNS**
- DIFFICULT CONVERSATION**

USE HEARING PROTECTION

- EARPLUGS**
- EAR MUFFS**

AUDIOGRAMS

- PARTICIPATE IN TESTING PROGRAM!**

Chemtrec CMA

Emergency Response Team
Workshops

Conducted by
Oil + Hazardous Material Control Training Division
Texas Engineering Extension Service
The Texas A+M University System