

PENYAKIT PEKERJAAN

Akta Keselamatan & Kesihatan Pekerja 1994 (OSHA)

- Peraturan-Peraturan Keselamatan dan Kesihatan Pekerja (Pemberitahuan Mengenai Kemalangan, Kejadian Berbahaya, Keracunan Pekerja dan Penyakit Pekerja) 2004 - NADOPOD
- “penyakit pekerjaan” ertinya penyakit yang berbangkit daripada atau berkaitan dengan kerja dan termasuk dalam kelas yang dinyatakan dalam Jadual 3;

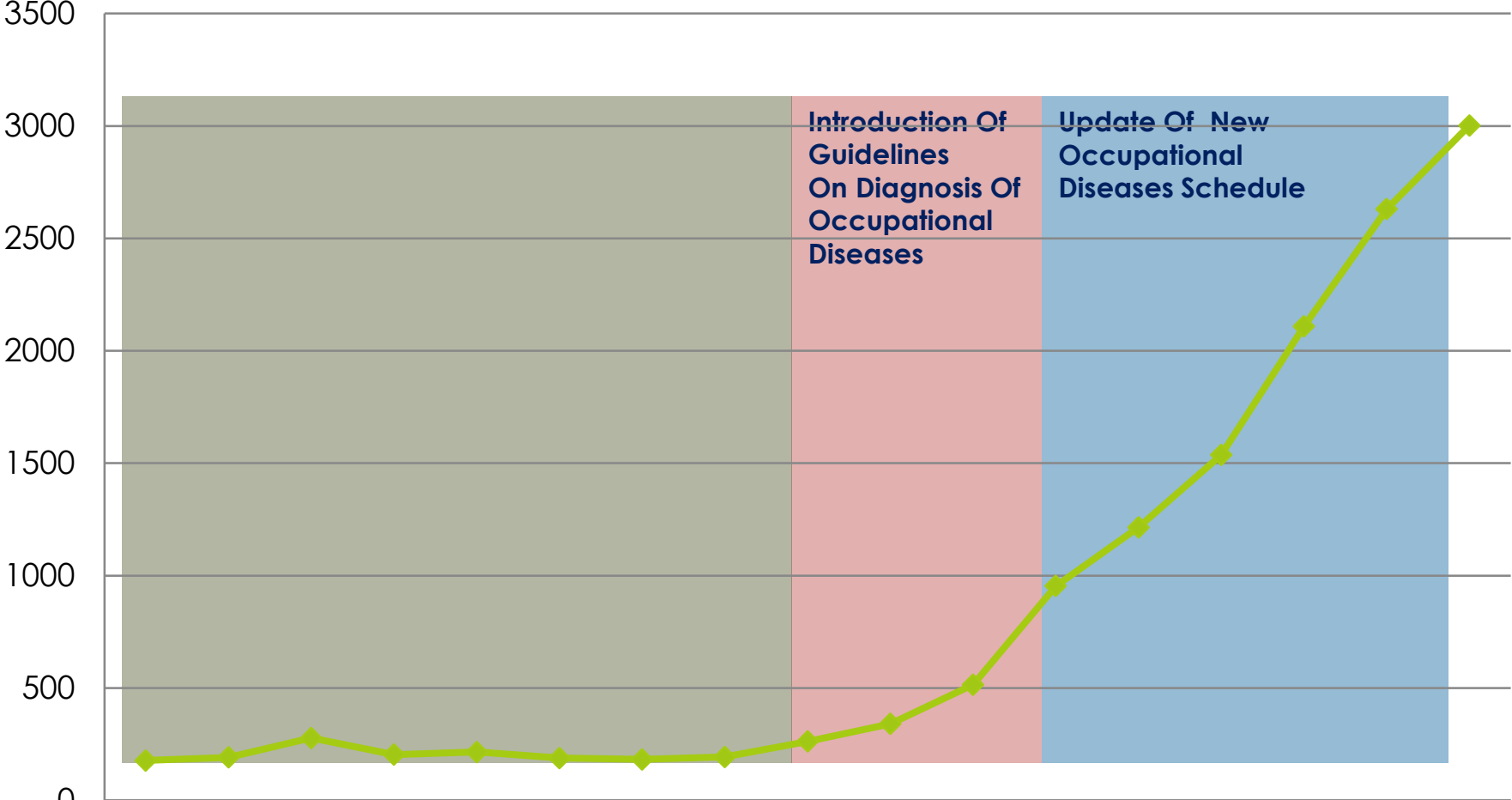
Akta Keselamatan Sosial Pekerja 1969

- Seksyen 28(1): Jika seseorang pekerja yang diambil kerja dalam apa-apa pekerjaan yang diperihalkan dalam **Jadual Kelima** mendapat apa-apa penyakit atau bencana yang dinyatakan dalam Jadual tersebut sebagai berkaitan dengan pekerjaan itu, atau jika seseorang pekerja yang telah bekerja dalam pekerjaan itu mendapat sesuatu penyakit atau bencana itu dalam tempoh enam puluh bulan selepas berhenti bekerja sedemikian itu, penyakit yang didapati atau bencana yang berlaku ke atasnya itu hendaklah, melainkan jika akasnya dibuktikan, disifatkan sebagai bencana kerja yang terbit daripada atau dalam masa pekerjaan:

International Labour Organization (ILO)

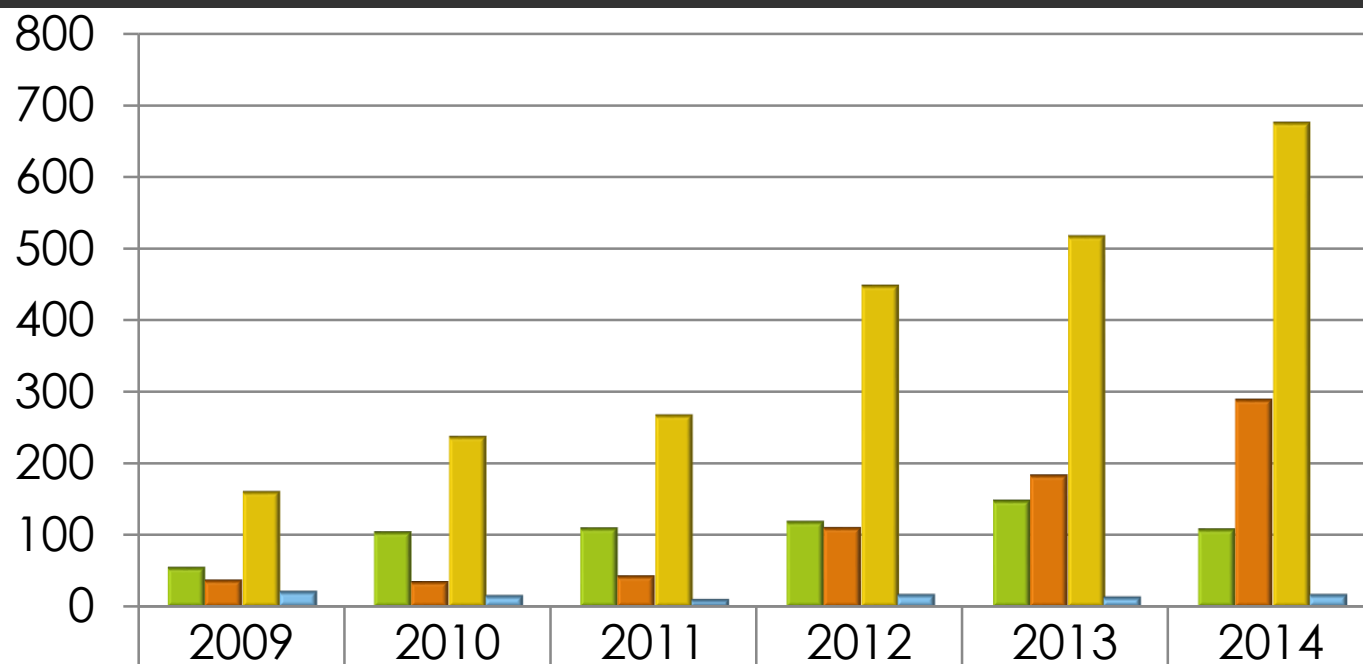
- Protocol of 2002 to the Occupational Safety and Health Convention, 1981, the term “occupational disease” covers any disease contracted as a result of an exposure to risk factors arising from work activity.
- ILO Employment Injury Benefits Recommendation, 1964 (No. 121), defines occupational diseases in the following terms: “.....regard diseases known to arise out of the exposure to substances and dangerous conditions in processes, trades or occupations as occupational diseases.”

Penyakit Khidmat Yang Dilaporkan Kepada PERKESO



◆ Bil. Kes PK	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
	178	192	278	204	216	189	183	194	263	341	515	954	1215	1537	2109	2630	3002

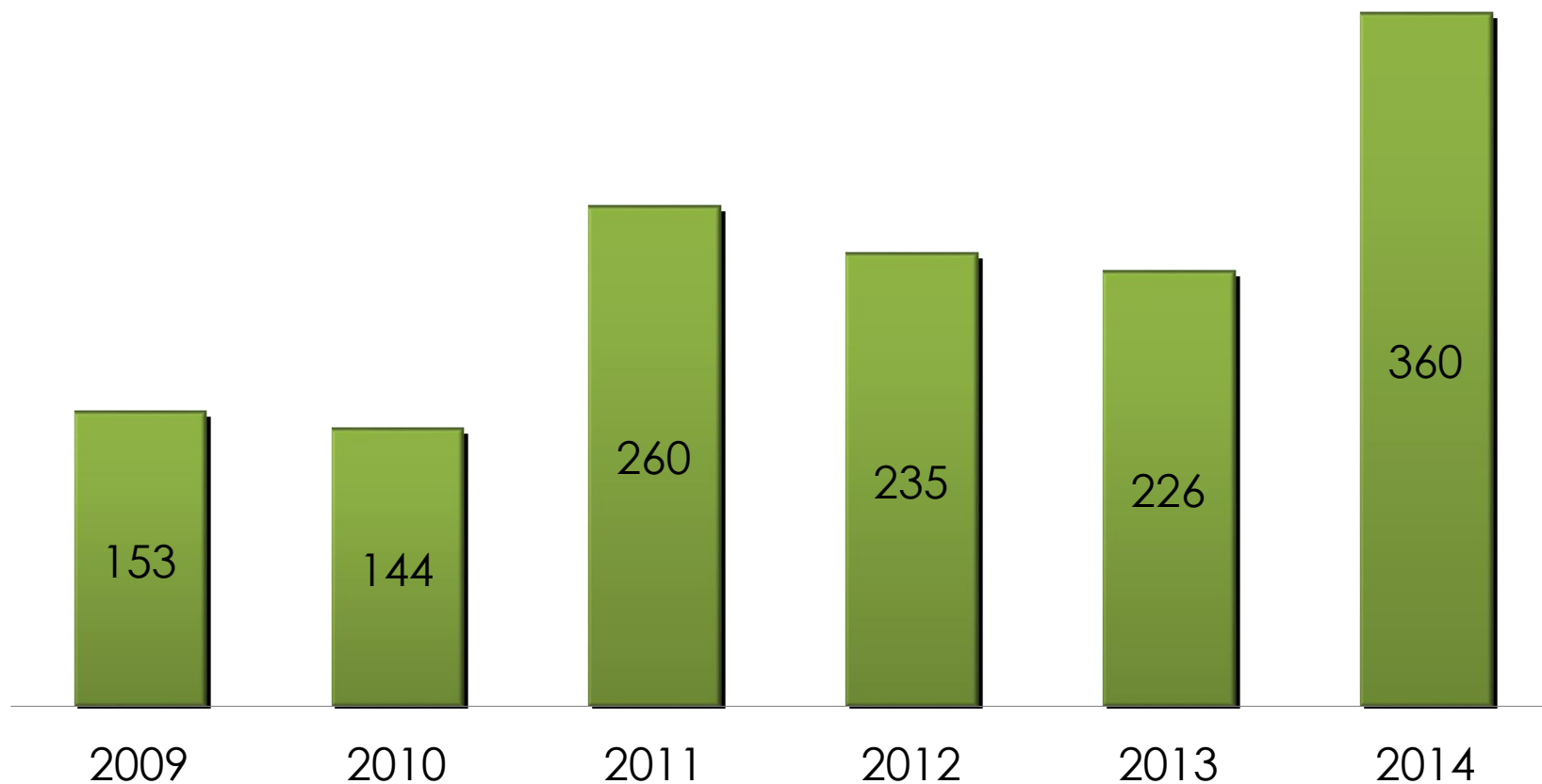
Penyakit Khidmat Mengikut Organ/Sistem Yang Dilaporkan Kepada PERKESO 2009-2014



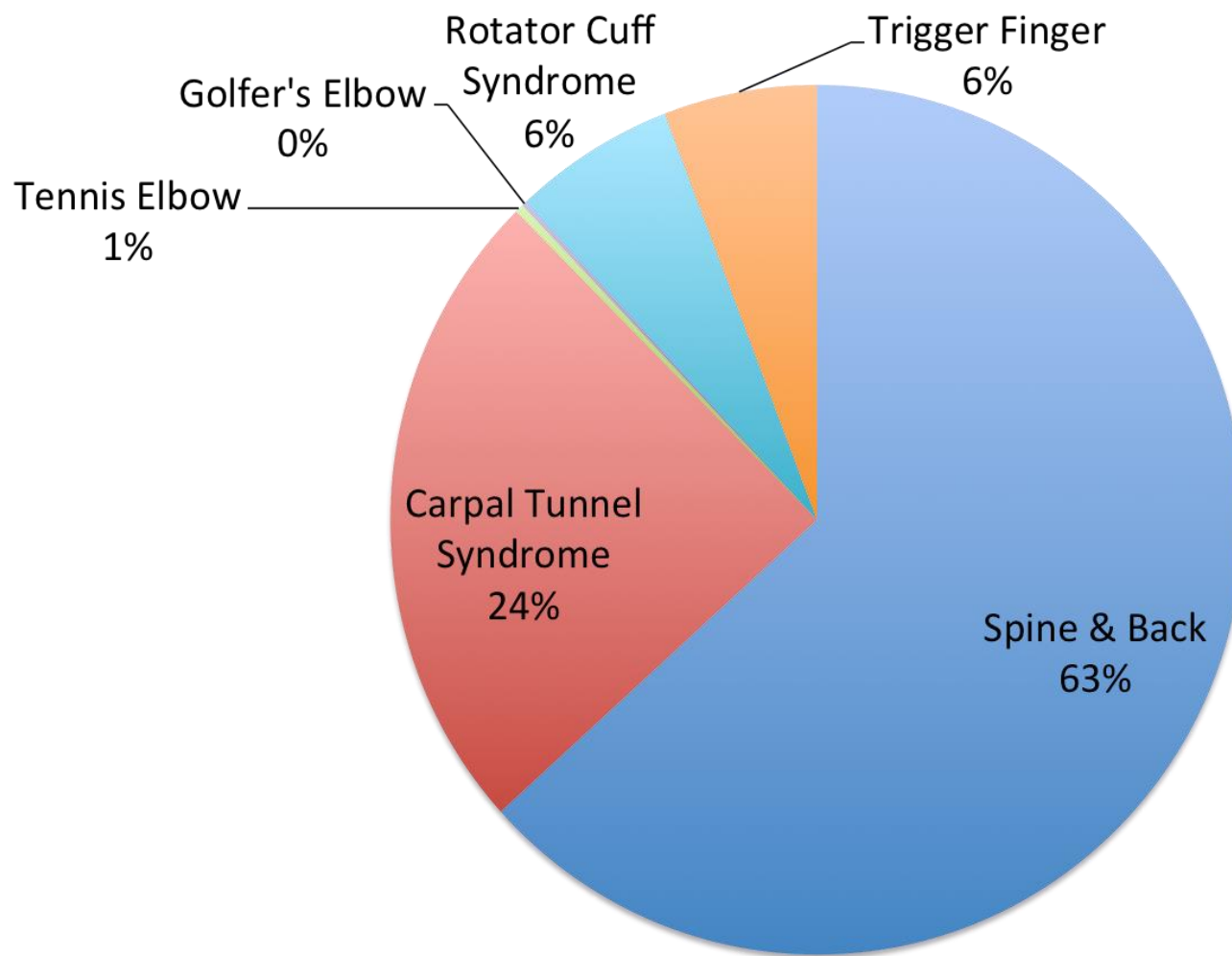
■ Penyakit Paru-paru Pekerja	54	103	108	117	146	107
■ Penyakit Kulit Pekerja	37	35	43	110	183	288
■ WRMSDs	161	238	268	448	517	675
■ Kanser Pekerja	19	14	9	15	12	15

Hilang Pendengaran Akibat Pendedahan Bunyi Bising [Noise Induced Hearing Loss (NIHL)] Yang Dilaporkan Kepada PERKESO Tahun 2009-2014

■ Bil. Kes



WRMSDs 2006-2010



Hazards

Physical

- Noise
- Radiation

Chemical

- Heavy metals
- Organic solvents

Biological

- Virus
- Bacteria

Ergonomics

- Repetitive movement
- Static posture

Psychosocial

- Stress
- Violence

Exposure

Inhalation

Skin
absorption

Ingestion

Risk

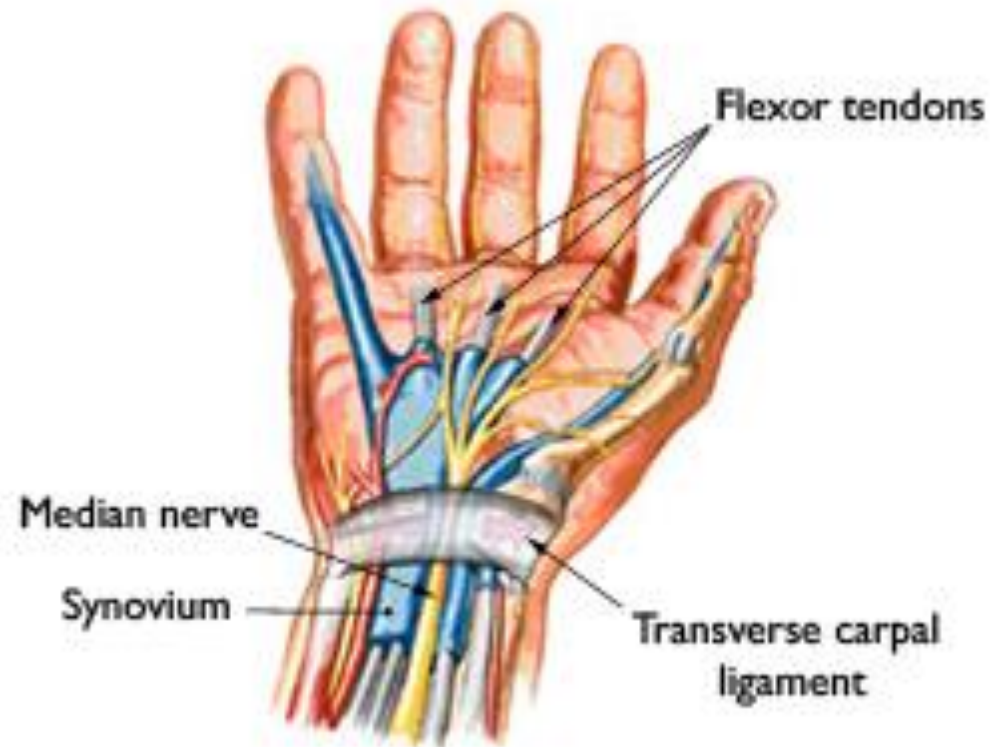
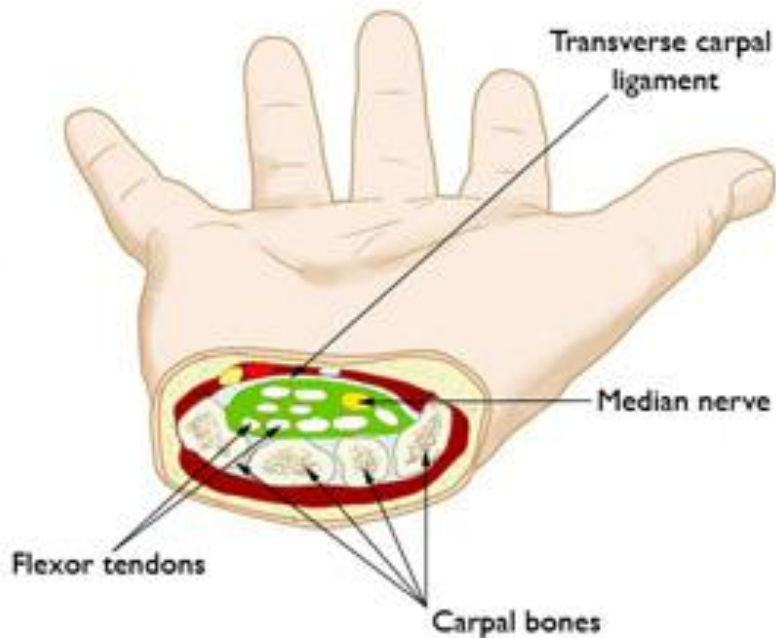
Duration

Frequency

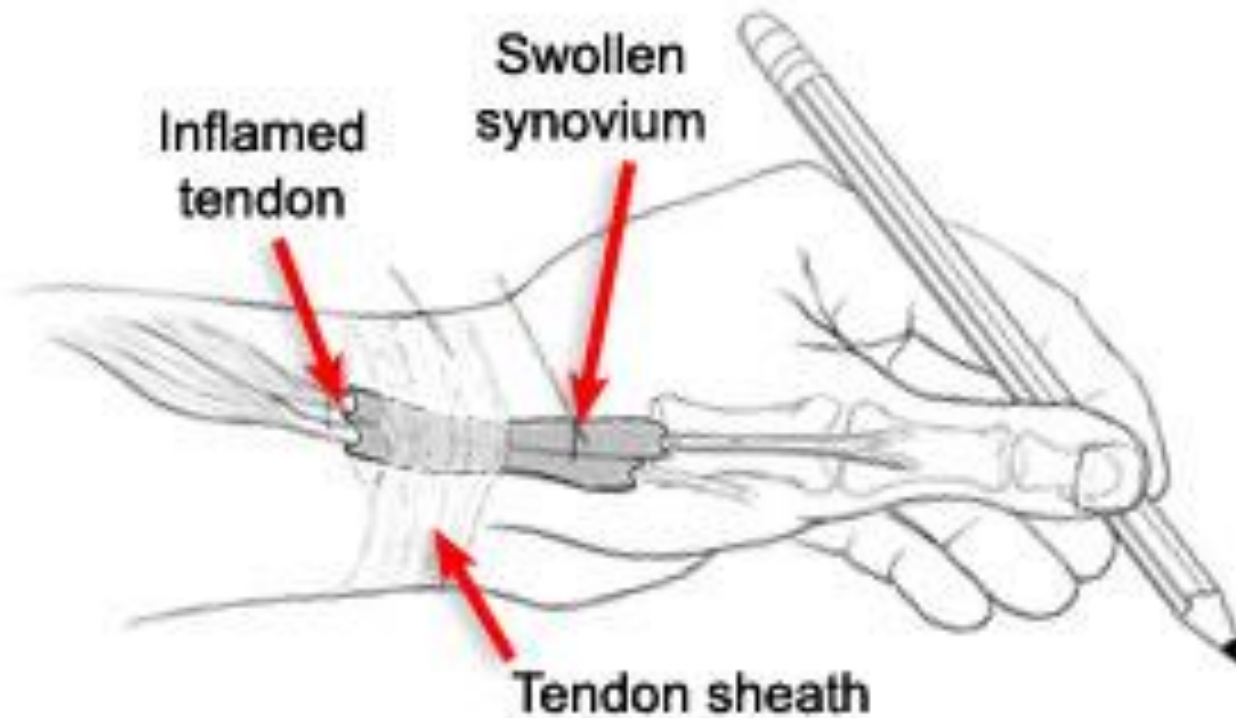
Magnitude

MUSCULOSKELETAL DISEASES

Carpal Tunnel Syndrome



De Quervain's Tenosynovitis

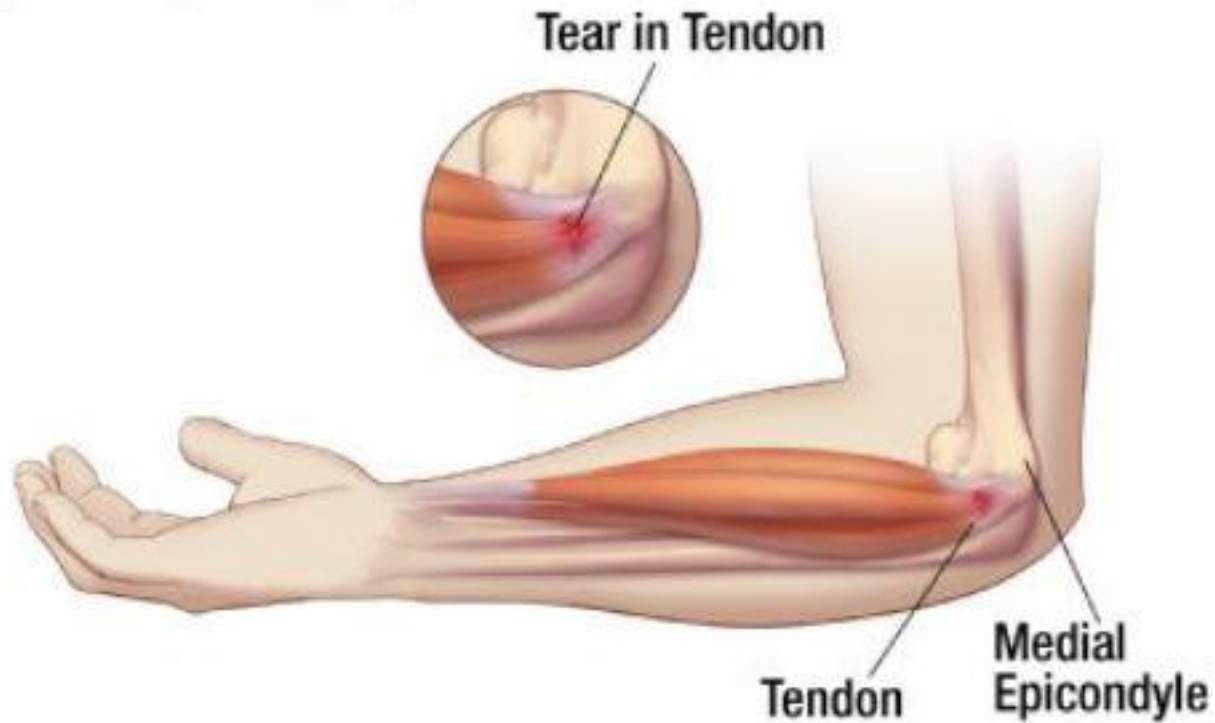


Lateral Epicondylitis

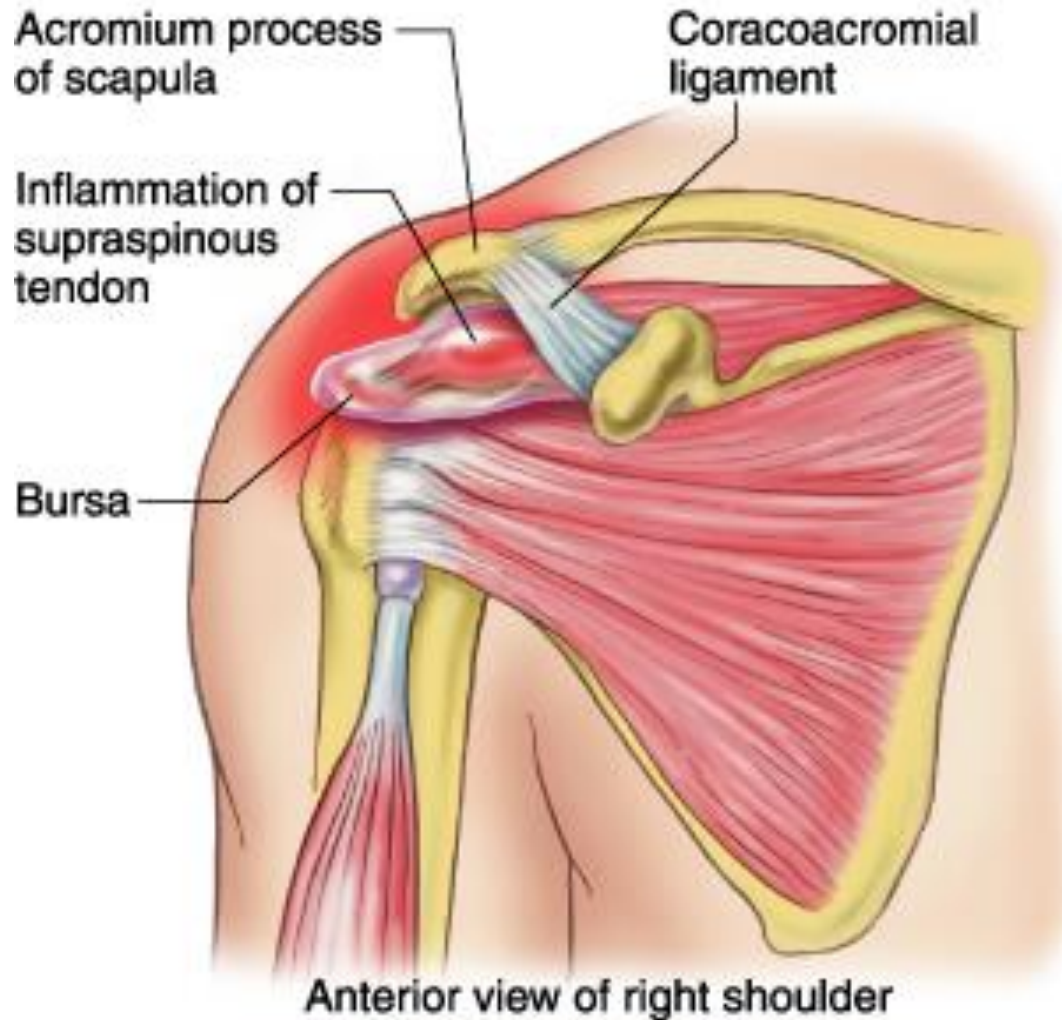


Medial Epicondylitis

Golfer's Elbow
(Medial Epicondylitis)



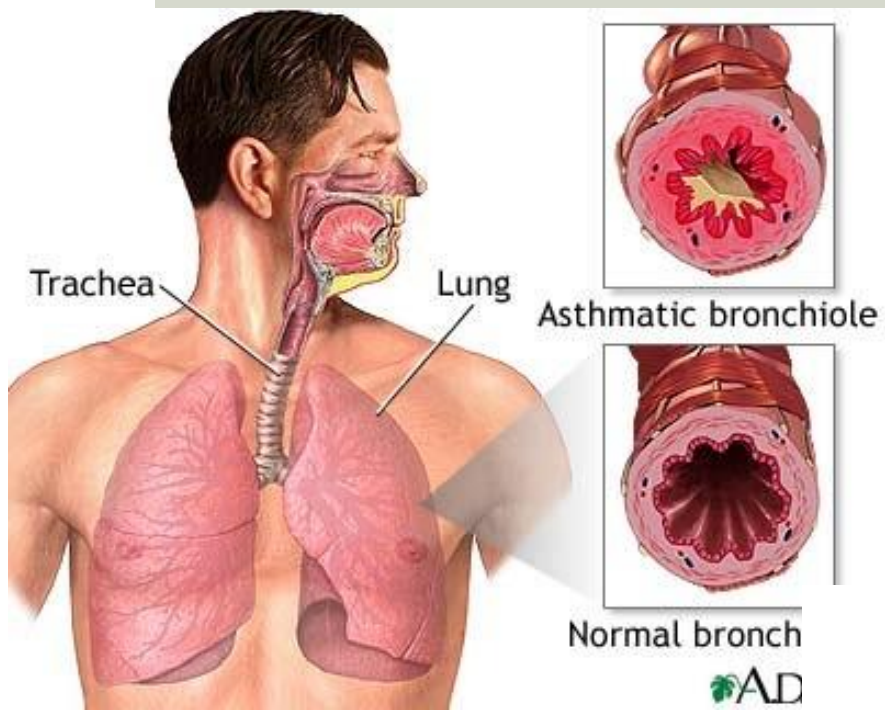
Rotator Cuff Syndrome



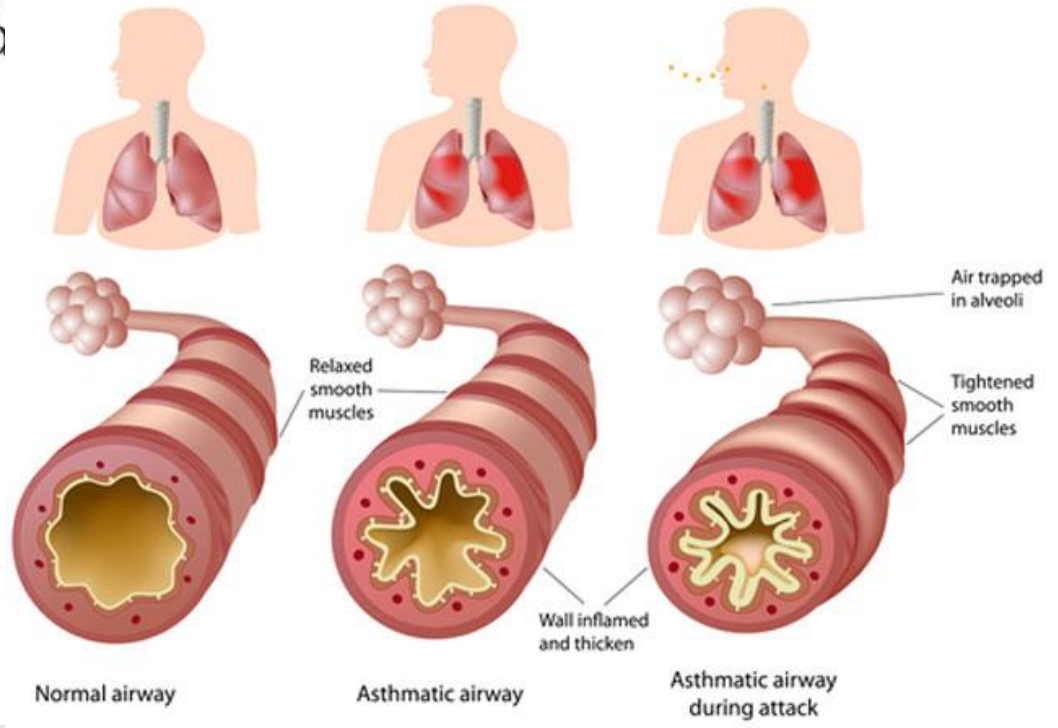
OCCUPATIONAL LUNG DISEASES

Occupational asthma- definition

- Occupational asthma is a disease characterized by **reversible airways obstruction** and/or **airway hyper-responsiveness** caused by agents in the working environment.
- Occupational asthma is diagnosed by confirmation of the diagnosis of asthma and its relationship with the workplace exposure.



Pathology of Asthma



Occupational asthma-

Occupational History

- The presence of an asthma-causing agent in the workplace
- No previous history of asthma before working.
- Improvement of symptoms during weekends or vacation and recurrence of symptoms on returning to work.
- Worsening of symptoms during the course of workweek.

Occupational asthma-

Clinical Presentation

- Coughing, wheezing, chest tightness, shortness of breath.
- Documented wheezing by ED/GP
- History of pre-existing asthma
- History of allergy/atopy
- Smoking history/environmental smoke

Occupational asthma-

Investigations

Spirometry

Serial Peak Expiratory Flow Rate

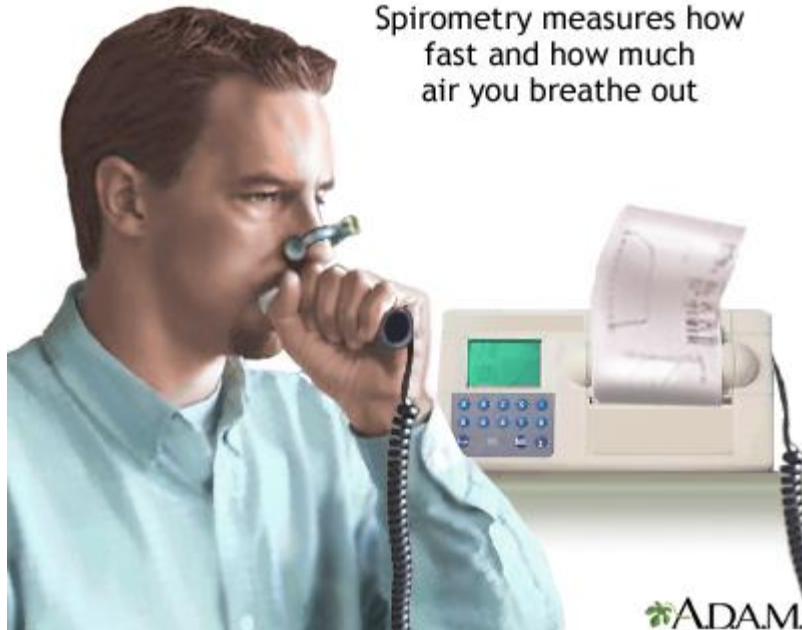
Patient takes a deep breath and blows as hard as possible into tube

Clip on nose

Technician monitors and encourages patient during test

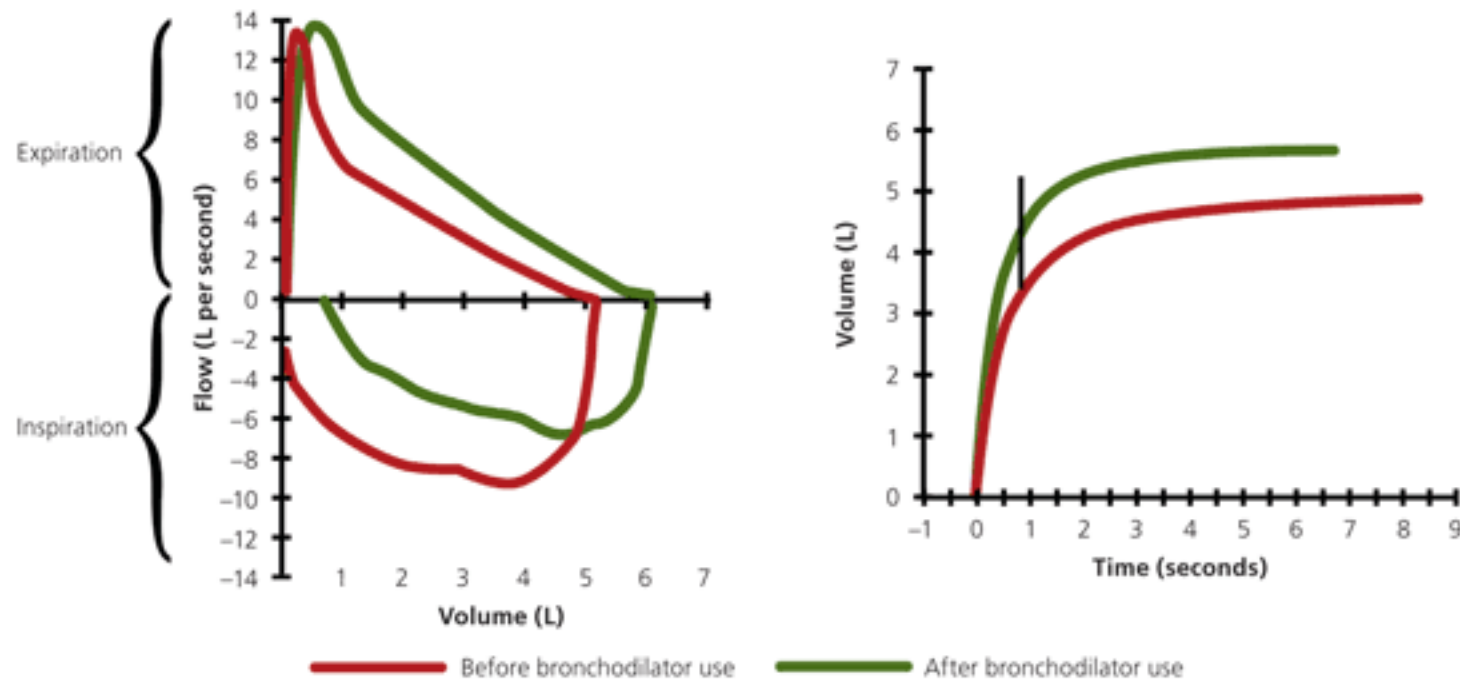
Spirometry measures how fast and how much air you breathe out

Machine records the results of the spirometry test



Age: 26 years Height: 5 ft, 8 in Weight: 197 lb Sex: Male Race: Hispanic

Spirometry	Prebronchodilators				Postbronchodilators		
	Predicted	LLN	Actual	% of predicted	Actual	% of predicted	% change
FVC (L)	5.20	4.34	5.18 ^A	99 ^D	6.06 ^F	116	+16 ^I
FEV ₁ (L)	4.37	3.64	3.55 ^B	81 ^E	4.64 ^G	106	+30 ^J
FEV ₁ /FVC (%)	84	75	68 ^C	81	77 ^H	91	+11
FEF _{25%-75%} (L per second)	4.74	3.11	2.41	50	3.84	80	+59



A = FVC (before bronchodilators), this is > LLN and thus does not show a restrictive pattern

B = FEV₁ (before bronchodilators)

C = FEV₁/FVC ratio (before bronchodilators), this is < LLN and thus shows an obstructive defect

D = FVC percentage of predicted (before bronchodilators)

E = FEV₁ percentage of predicted (before bronchodilators)

F = FVC (after bronchodilators)

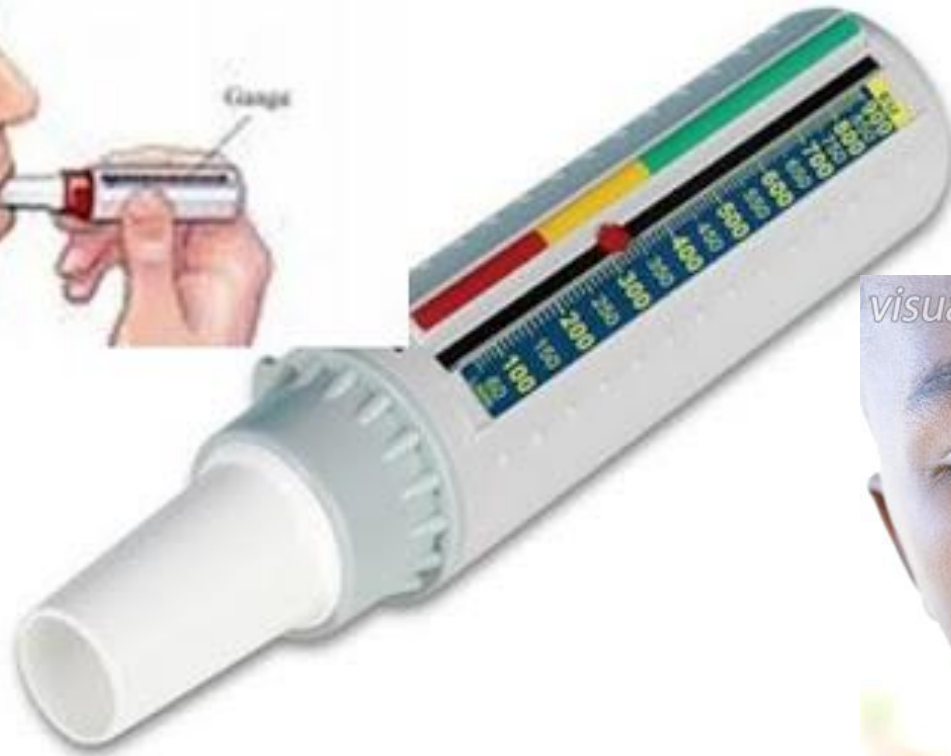
G = FEV₁ (after bronchodilators)

H = FEV₁/FVC ratio (after bronchodilators)

I = A 0.88-L increase in FVC is a 16% increase

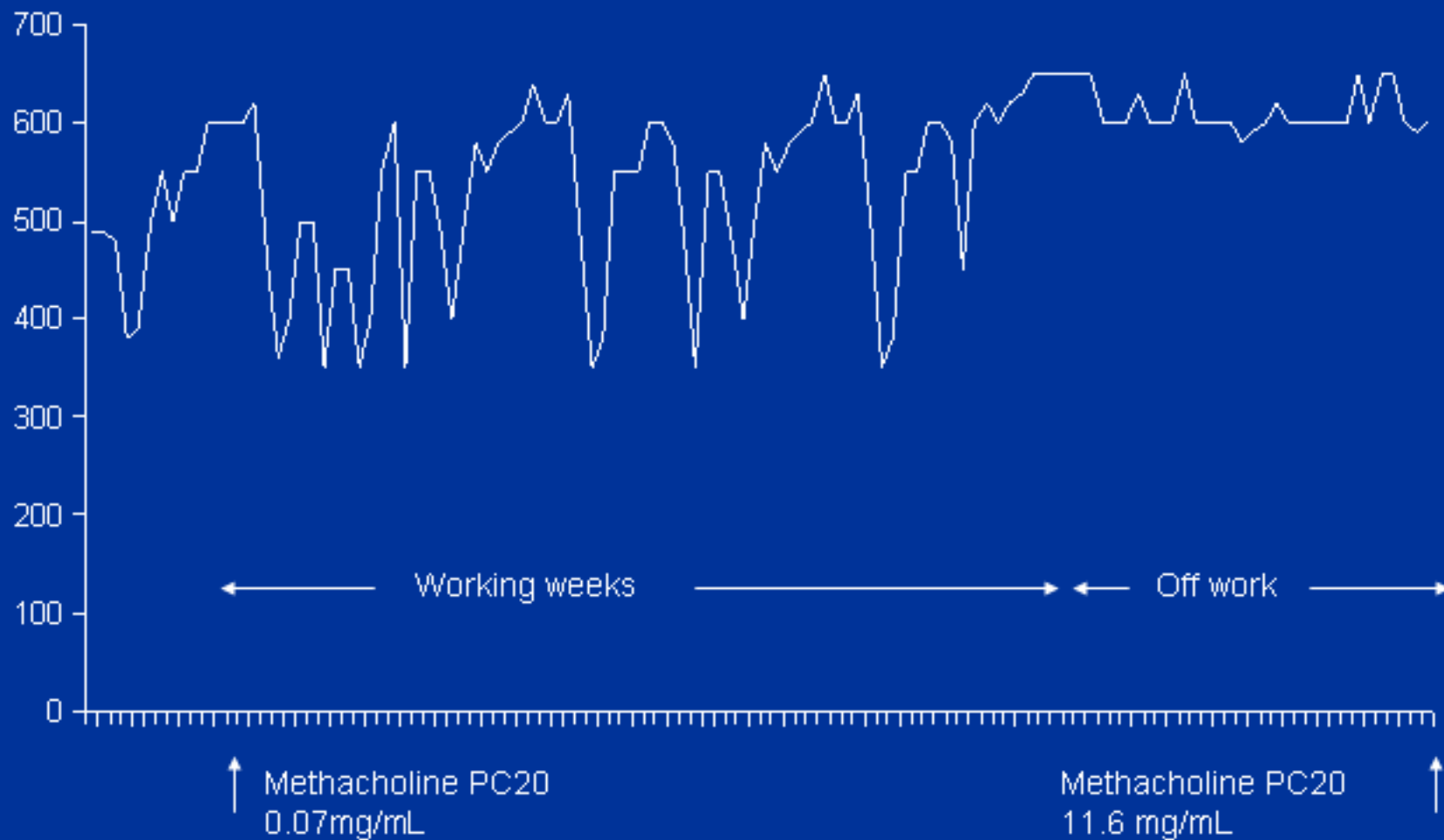
J = A 1.09-L increase in FEV₁ is a 30% increase

The above indicates reversibility because at least one of the two (FVC or FEV₁) increased by at least 0.2 L and by at least 12%



A 42-year-old polyurethane foam worker with occupational asthma from toluene diisocyanate (TDI)

Peak flows (L/min), 4 x per day for 3 weeks at work and 2 weeks off work



Alpha amylases	Cockroach material	Some hardwood dusts	Papain
Azodicarbonamide	Coffee bean dust	Henna	Penicillins
Bromelains	Cow epithelium/urine	Isocyanates	Persulphates
Carmines	Crustacean proteins	Ispaghula	Phthalic anhydride
Castor bean dust	Diazonium salts	Trimellitic anhydride	Piperazine
Cephalosporins	Egg proteins	Latex	Psyllium
Chloramine-T	Ethylenediamine	Maleic anhydride	Some reactive dyes
Chloroplatinates and other halogenoplatinates	Chromium (VI) compounds	Methyltetrahydrophthalic anhydride	Rosin-based solder flux fume
Fish proteins	Flour dust	Nickel sulphate	Some softwood dusts
Cobalt (metal and compounds)	Tetrachlorophthalic anhydride	Opiates	Soybean dust
Glutaraldehyde	Subtilisins	Storage mite	Spiramycin
Laboratory animal excreta/secretions			

Fibrotic lung disorders - pneumoconiosis

- Classical inorganic dust exposure: silica, asbestos, coal dusts
- Latency period: based on dose & duration of exposure, physical/chemical properties of dust
- Benign – when radiologic abnormalities not accompanied by respiratory symptoms. E.g. baritosis (barium sulphate), stannosis (tin oxide), siderosis (iron oxide), mica dust,

Fibrotic lung disorders - SILICOSIS

- Silica – crystalline & amorphous forms
- Most silicosis due to crystalline silica
- Crystalline – quartz, cristobalite & tridymite
- Job task associated with silicosis – blast, drill, cut, grind, crush & transport silica-containing materials
- Long latency period but have acute and accelerated forms
- Extrapulmonary silicosis – liver, spleen, kidneys, bone marrow & lymph nodes

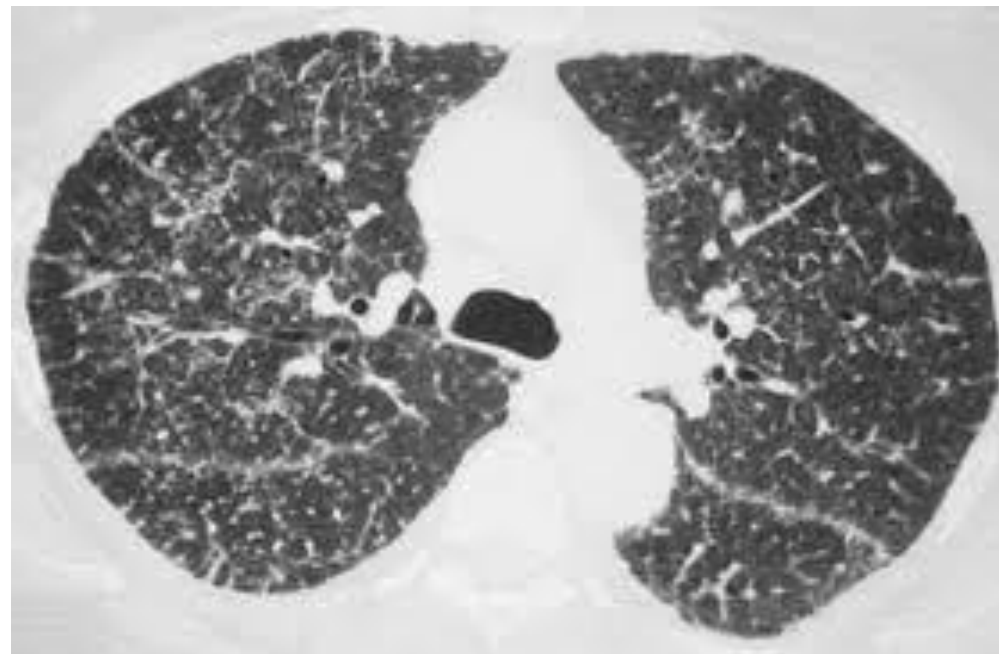




FIGURE 15-18
Advanced silicosis
Scarring has contracted
the upper lobe into a
small dark mass (*arrow*).
Note the dense pleural
thickening.

Fibrotic lung disorders - ASBESTOSIS

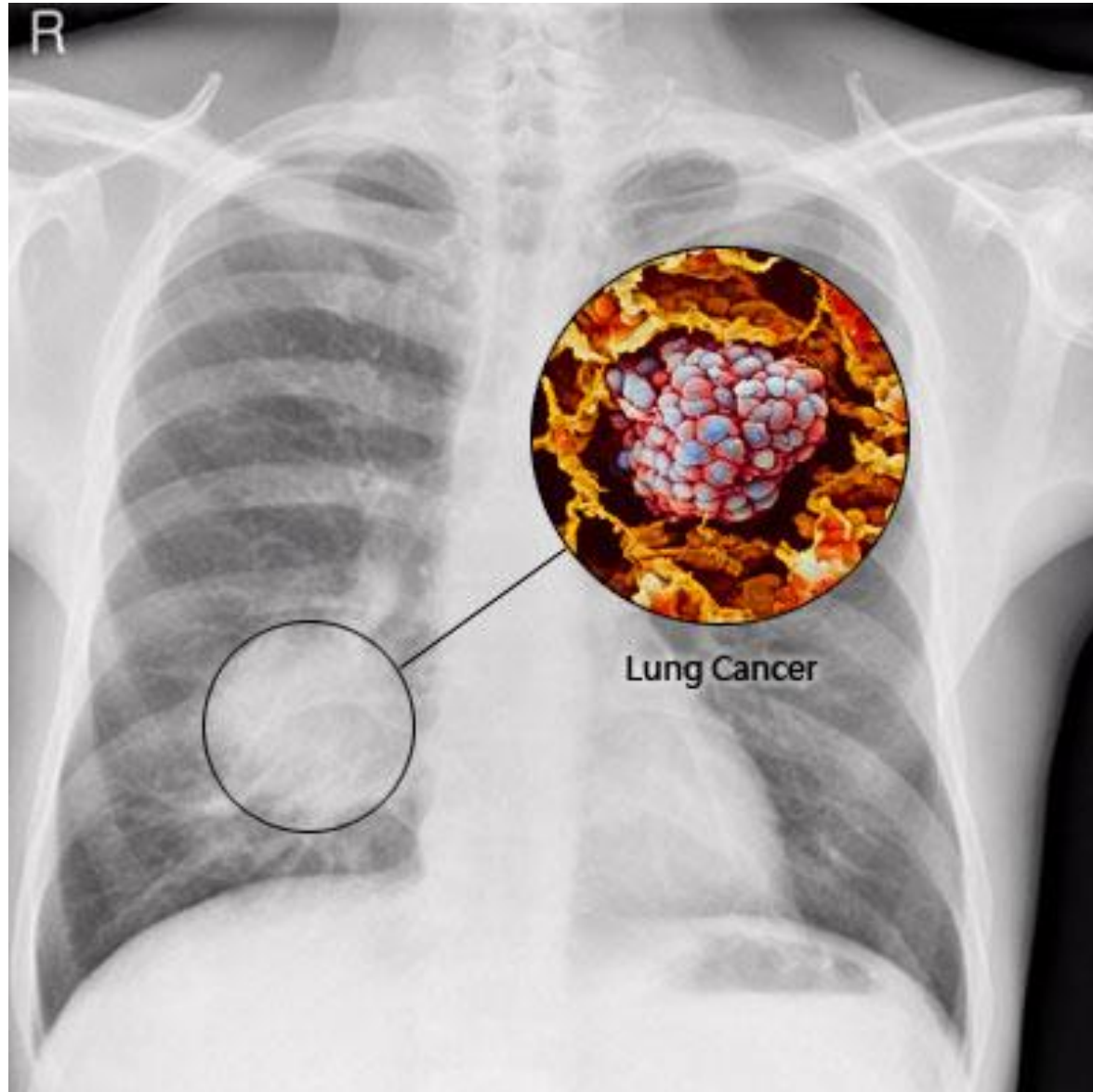
- ▣ Asbestos fibers – serpentines & amphiboles
- ▣ Serpentine – chrysotile
- ▣ Amphiboles – anthophyllite, amosite (grunerite), crocidolite (riebeckite), tremolite & actinolite
- ▣ Most commonly found in products – chrysotile (95%). Less toxic but associated with most of the cases
- ▣ Effects of asbestos is dose-related
- ▣ Latency is at least 10 years
- ▣ Objective findings: fibrosis & pleural plaques on chest X ray/CT scan

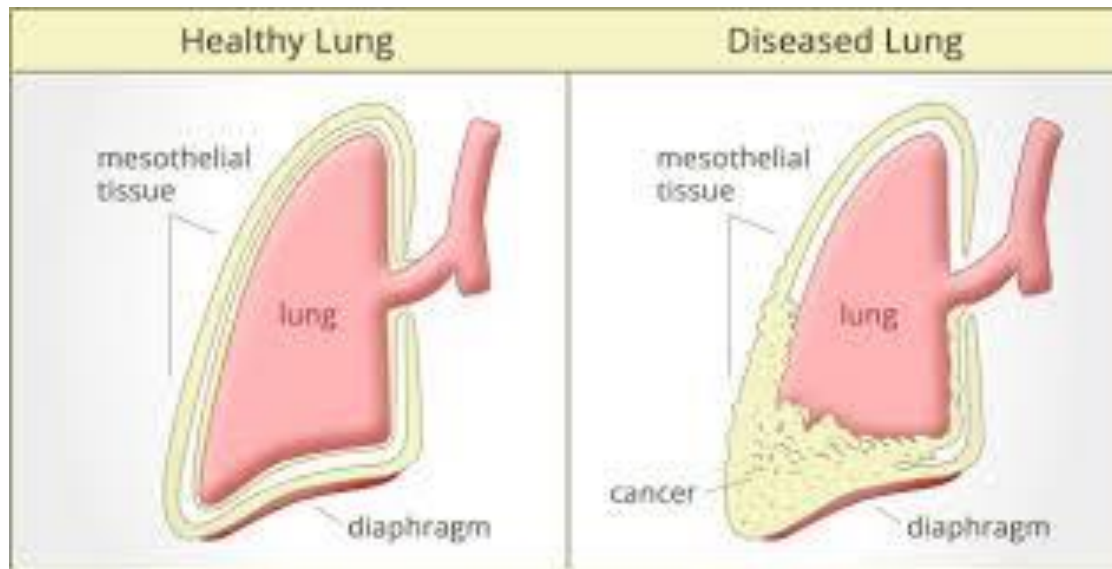
FIBROTIC LUNG DISORDERS - COAL WORKERS' PNEUMOCONIOSIS

- Anthracite, bituminous & lignite coal dusts
- Exposure during mining, handling & transporting
- Usually develop after more than 10 years of exposure
- Progressive Massive Fibrosis (PMF)

Lung cancer

- ▣ Asbestos
- ▣ Silica – quartz, cristobalite
- ▣ Arsenic compounds
- ▣ Cadmium compounds
- ▣ Chromium (VI) compounds
- ▣ Mustard gas
- ▣ Nickel compounds
- ▣ Diesel exhaust particulate
- ▣ Phosphorus-32
- ▣ Radon-222
- ▣ Alpha-emitting radionuclides
- ▣ Radium compounds/decay products





Occupational Dermatitis

- **Contact Dermatitis**
 - Irritant
 - Allergic
- Contact Urticaria
- Oil acne & chloracne
- Pigmentations
- cancers

Acute Irritant Contact Dermatitis

- ⌘ Acute vesiculo-bullous dermatitis
- ⌘ Irritant reaction to ethylene oxide
- ⌘ Medical sterilization, fumigant



Ethylene oxide

Chronic Irritant Contact Dermatitis



Allergic Contact Dermatitis

- ⌘ Edema, erythema, scaling
- ⌘ Allergic reaction to rubber accelerator mercaptobenzothiazole
- ⌘ Rubber boots, rubber products



rubber accelerator,
mercaptobenzothiazole

Chromium



All cement contains **chromium. Allergic sensitivity** to dichromate is often associated with a cement dermatitis

In such cases the primary irritant action of the **alkali plus the abrasive and hygroscopic properties of cement** precede and favor sensitization by the chrome salts

Contact Allergy to Computer Keyboard Wrist Rests

Contact allergy to computer keyboard wrist rests is generally an allergy to a thiuram accelerator used in manufacture of the synthetic neoprene rubber



DIAGNOSTIC TESTS

- ▣ PATCH TESTS
- ▣ PRICK TESTS
- ▣ SCRATCH TEST
- ▣ OPEN TEST
- ▣ USAGE TEST

Patch test



Patch in place



Angry back



Several reactions

TERIMA KASIH