Pneumoconiosis and related OLD

South west regional training day
September 2018

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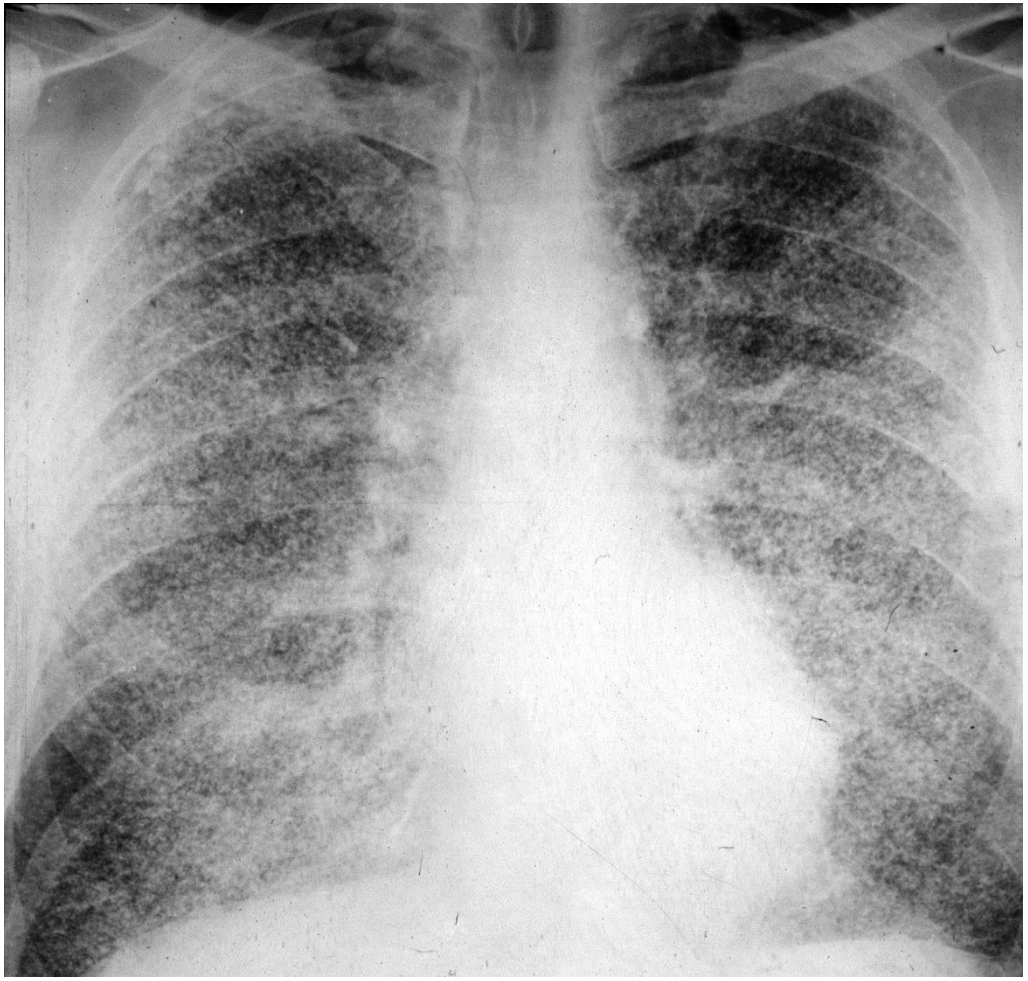
@lungsatwork



stannosis: tin smelter (Cornwall)

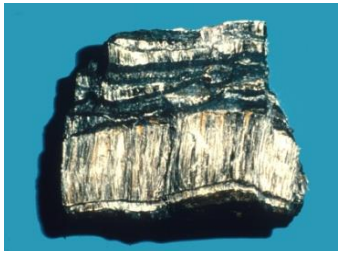
the pneumoconioses: a classification

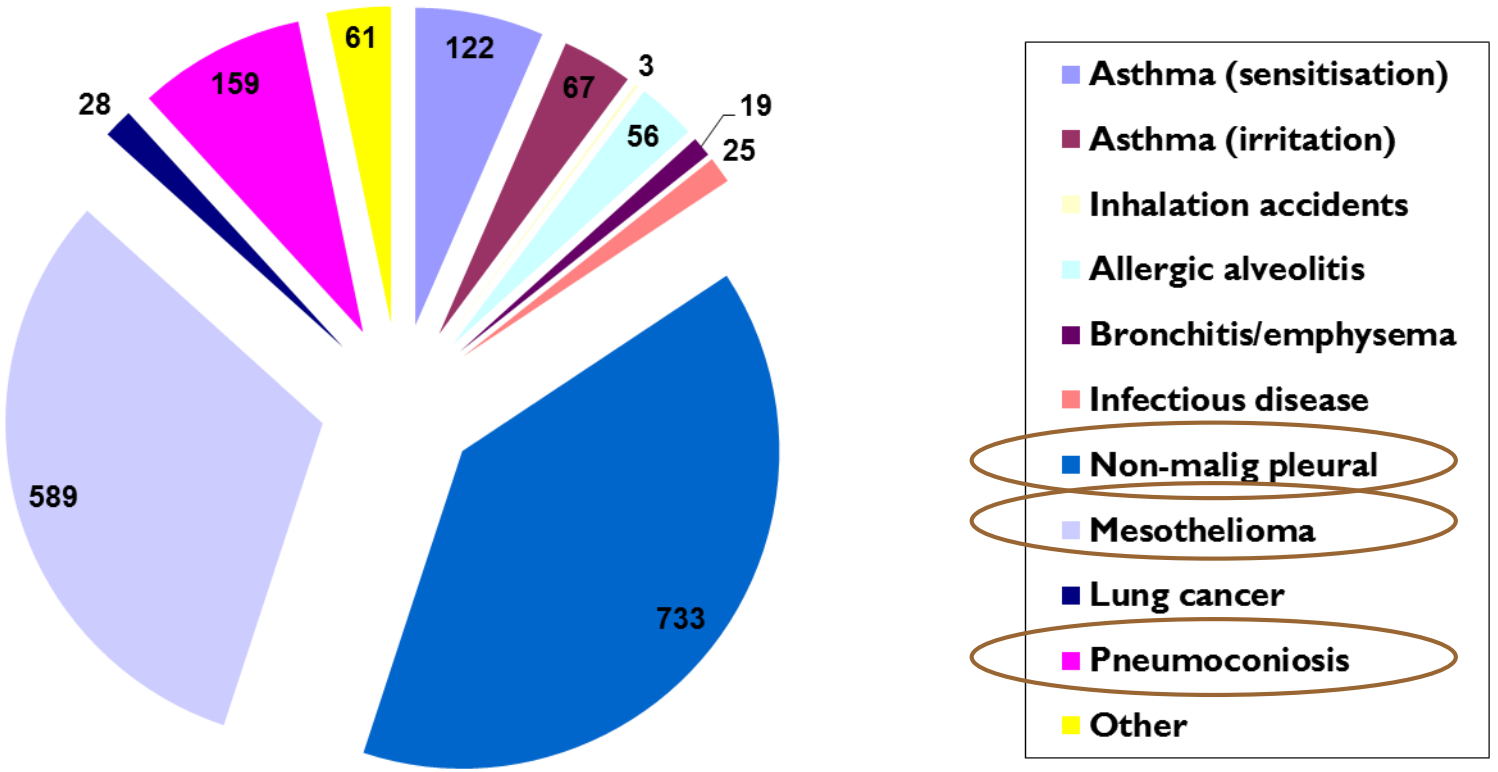
inert*		mixed*	fibrogenic	granulomatous
high radiodensity	low radiodensity			
tin iron talc fibreglass titanium zirconium antimony barium	cement limestone chalk gypsum marble	coal kaolin slate	cystalline silica asbestos fibrous clays zeolite MMMF	beryllium
* beware silica ‘contamination’				

occupational lung disease in the UK

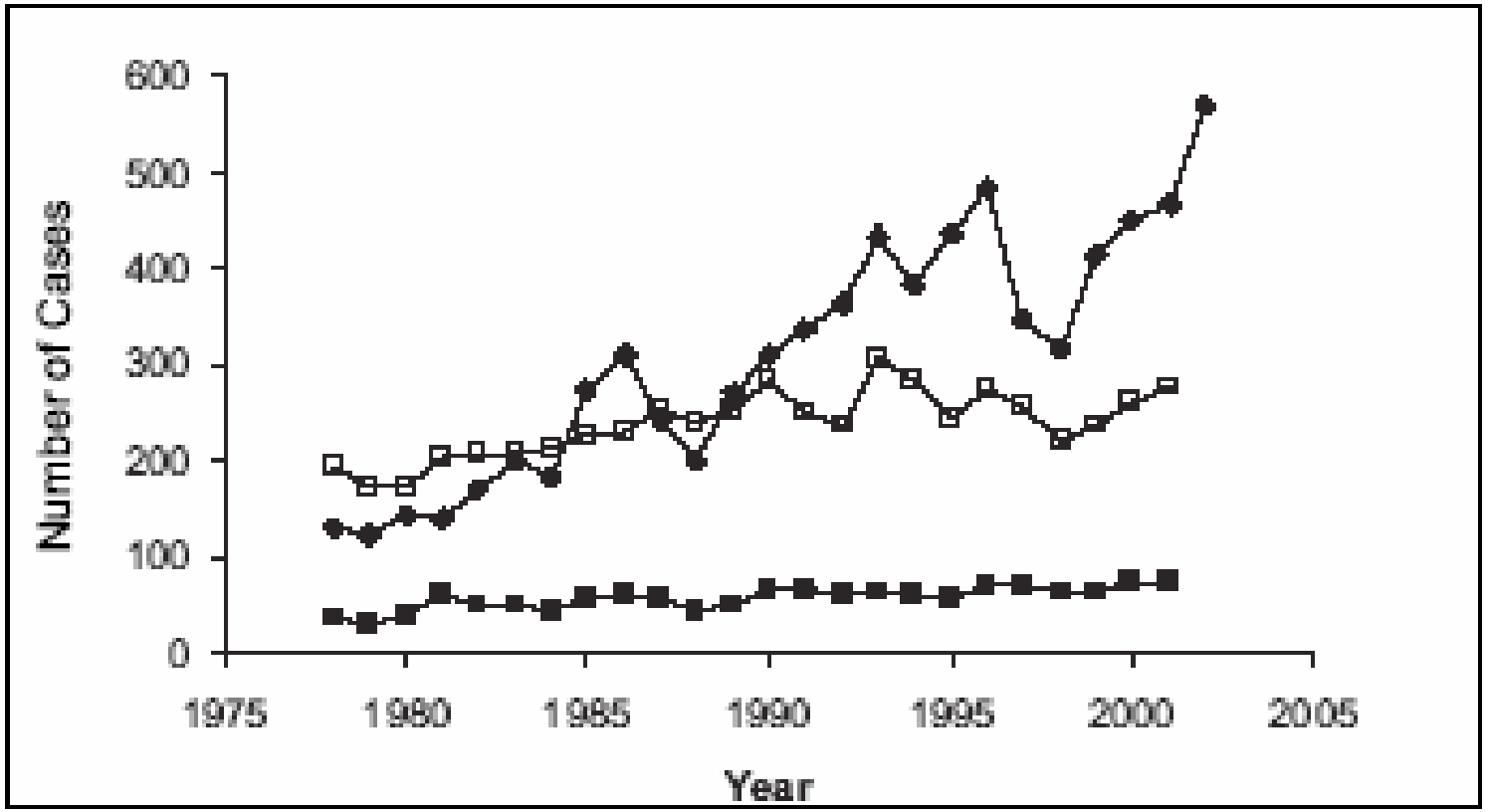
SWORD 2012

- respiratory and occupational physicians only
- sampling





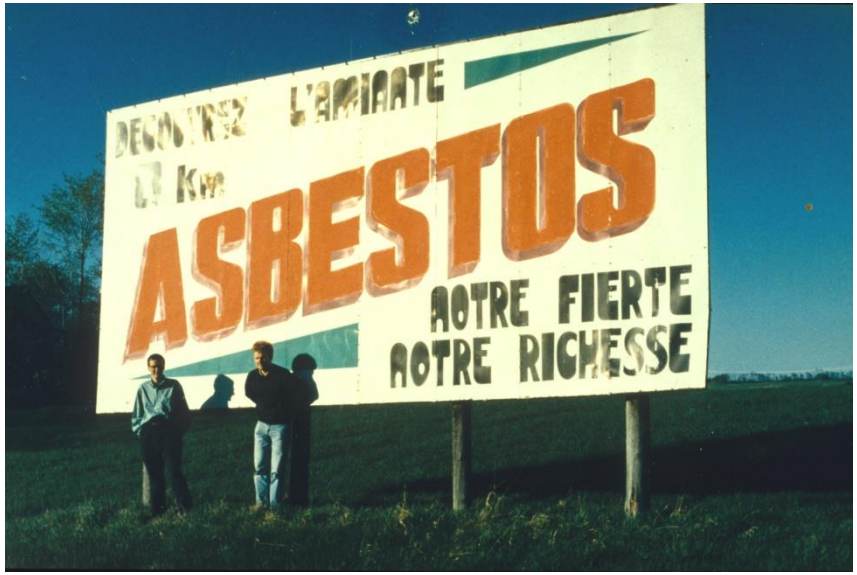
asbestosis in the UK

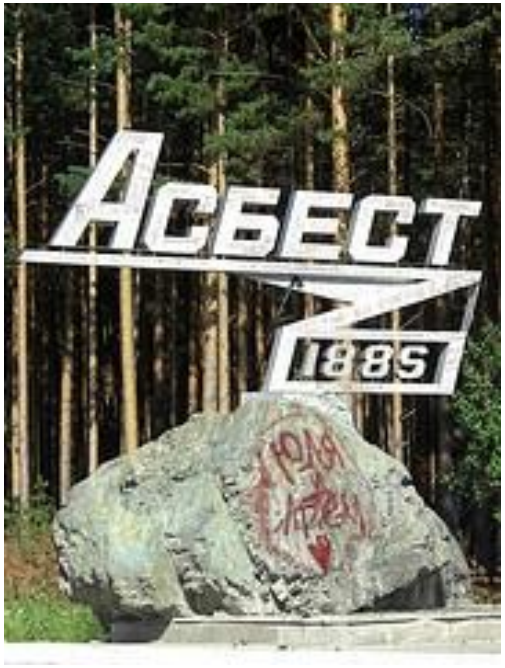


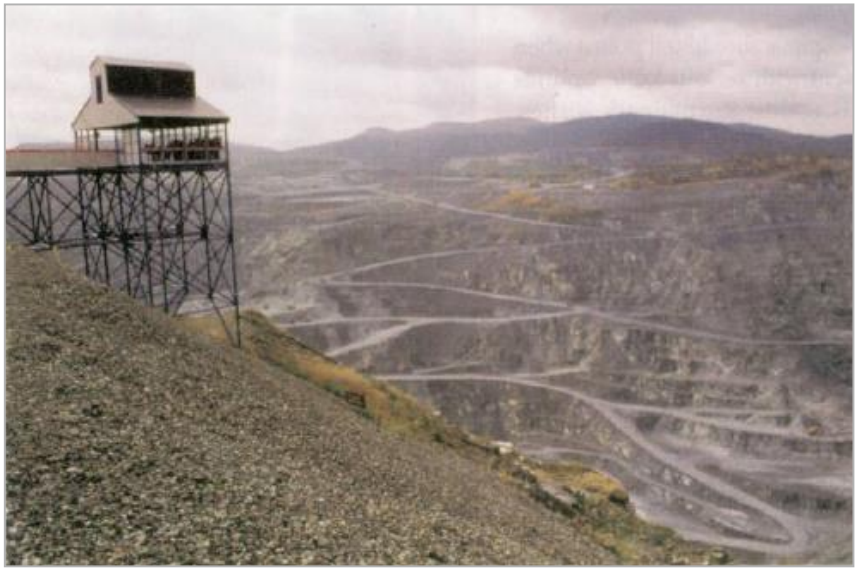
■ asbestosis as the underlying cause on death certificate;

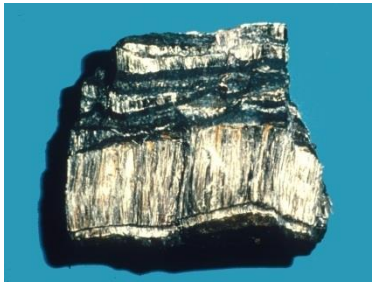
❑ asbestosis mentioned on death certificate;

♦ PD D1 (asbestosis) assessments



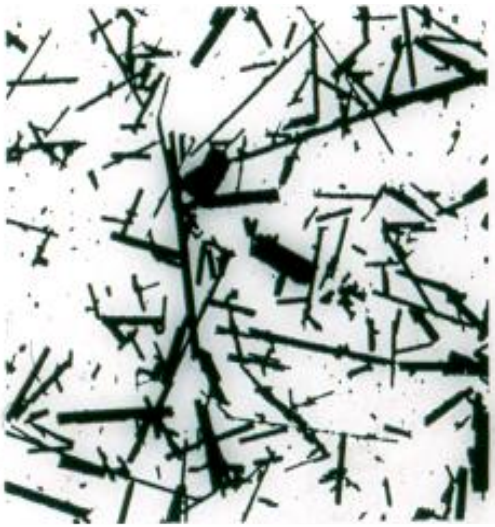






chrysotile (white) asbestos

- Urals
- Brazil
- Kazaghstan
- Zimbabwe
- (Quebec)



AMOSITE

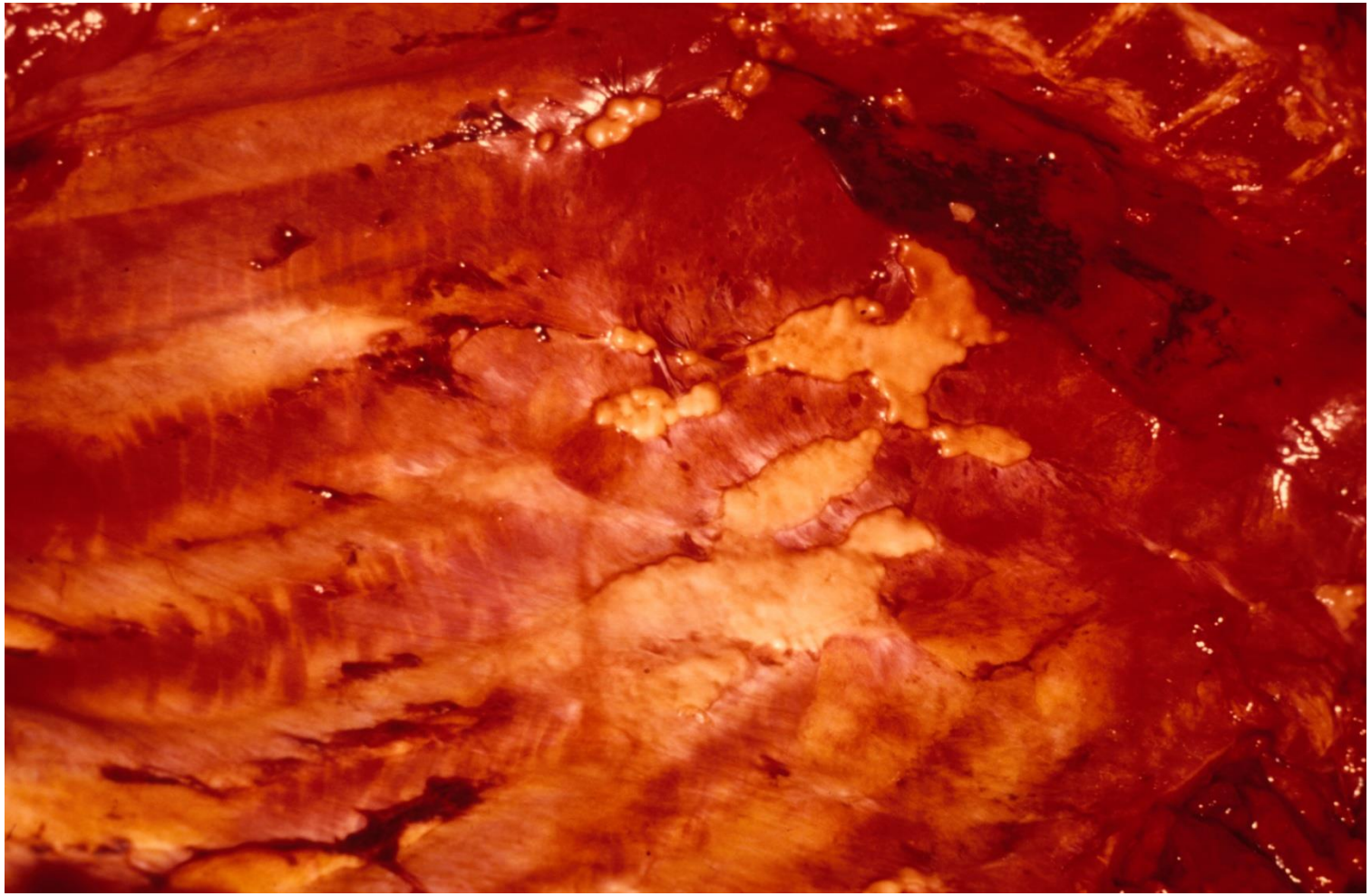
CROCIDOLITE

‘amphiboles’

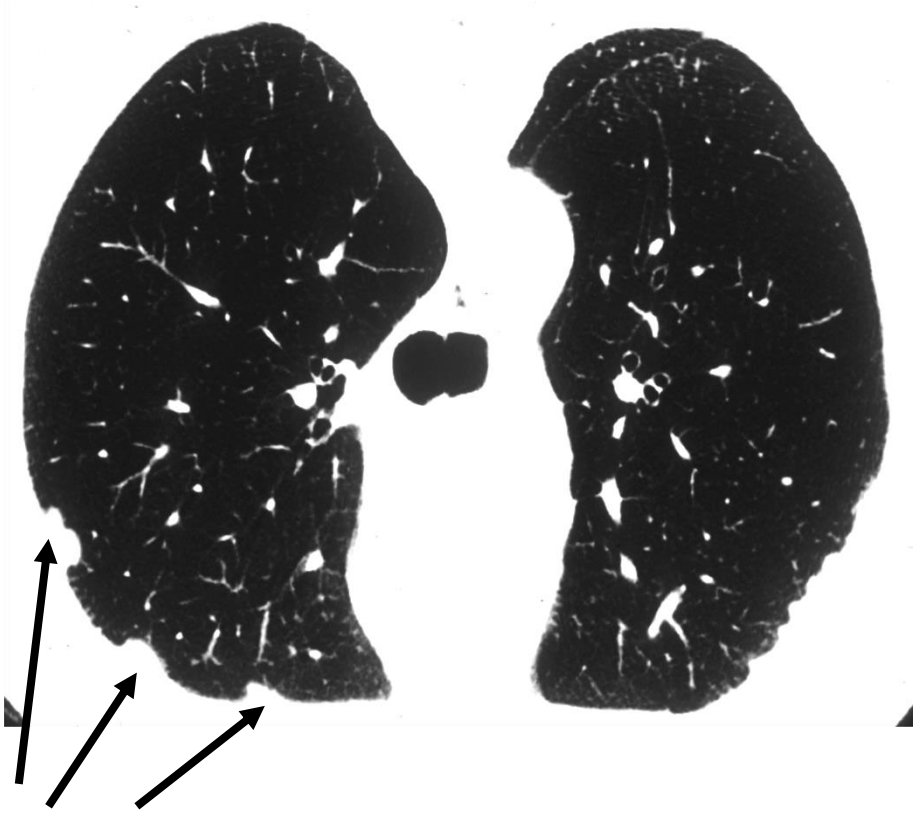
‘serpentine’

CHRYSOTILE

TREMOLITE

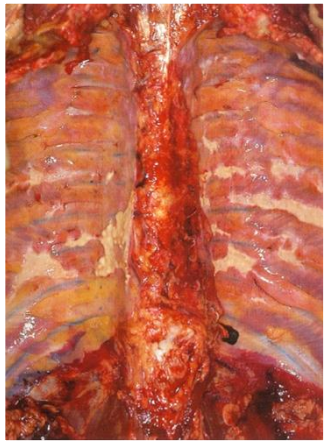


pleural plaques (asbestos): parietal


plaques

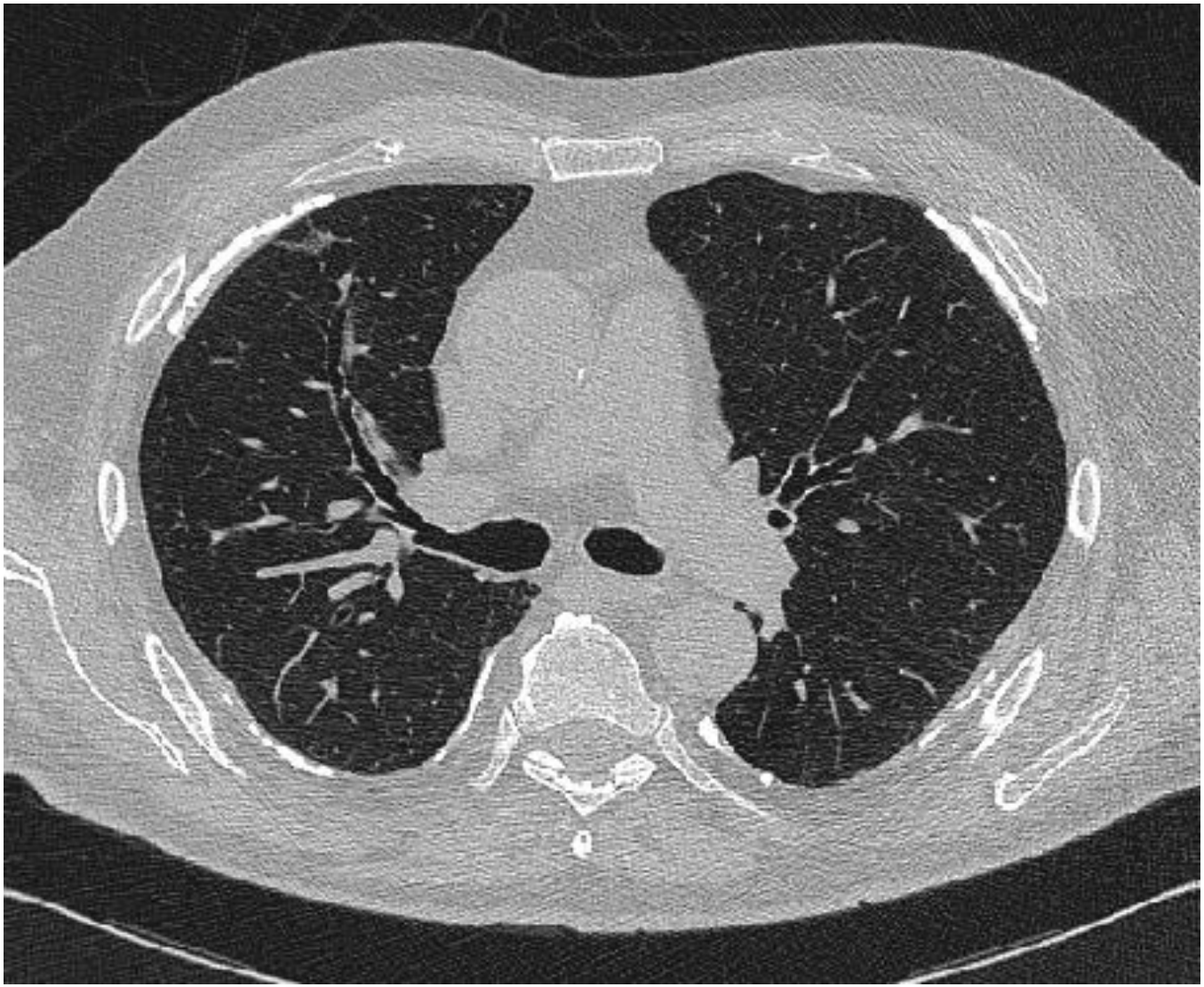

sharp edges

pleural plaques and personal injury



no IIDB

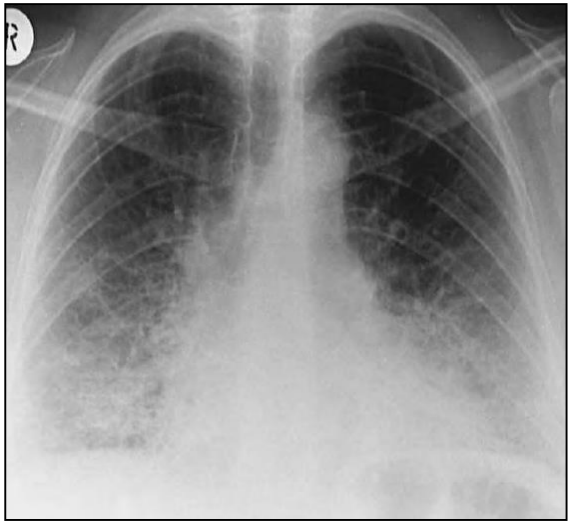
<2005	case-by-case	Yes (c.£10,000)
2005	Manchester10 (Justice Holland)	Yes (£4,000)
2006	Zurich/Norwich (Court of Appeal)	No
2007	‘Johnston Appeal’ (House of Lords)	No
2009	Scottish Parliament	Yes
2009	appeal	No
2010	appeal failed ...	(Yes)



diffuse pleural thickening with calcification

- probably follows ‘benign’ pleural effusion

asbestosis



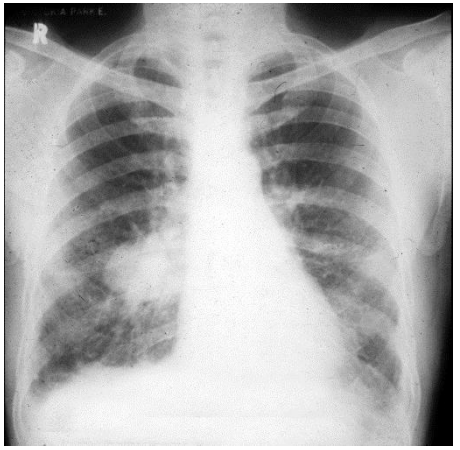
pneumoconiosis panel: mortality of certified cases of asbestosis

study group:	665 men (283 deaths)	
	certified between 1952 and 1976	
causes of death:	lung cancer	39%
	mesothelioma	9%
	asbestosis	20%
O/E deaths:	all causes	2.6
	lung cancer	9.1

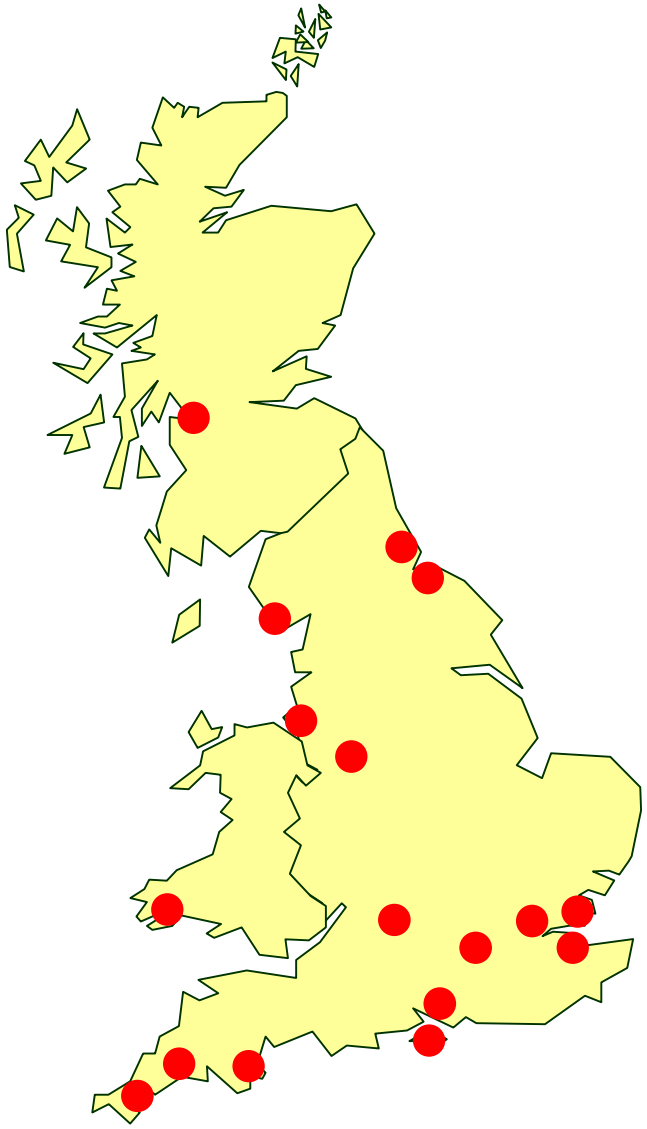
lung cancer and asbestos

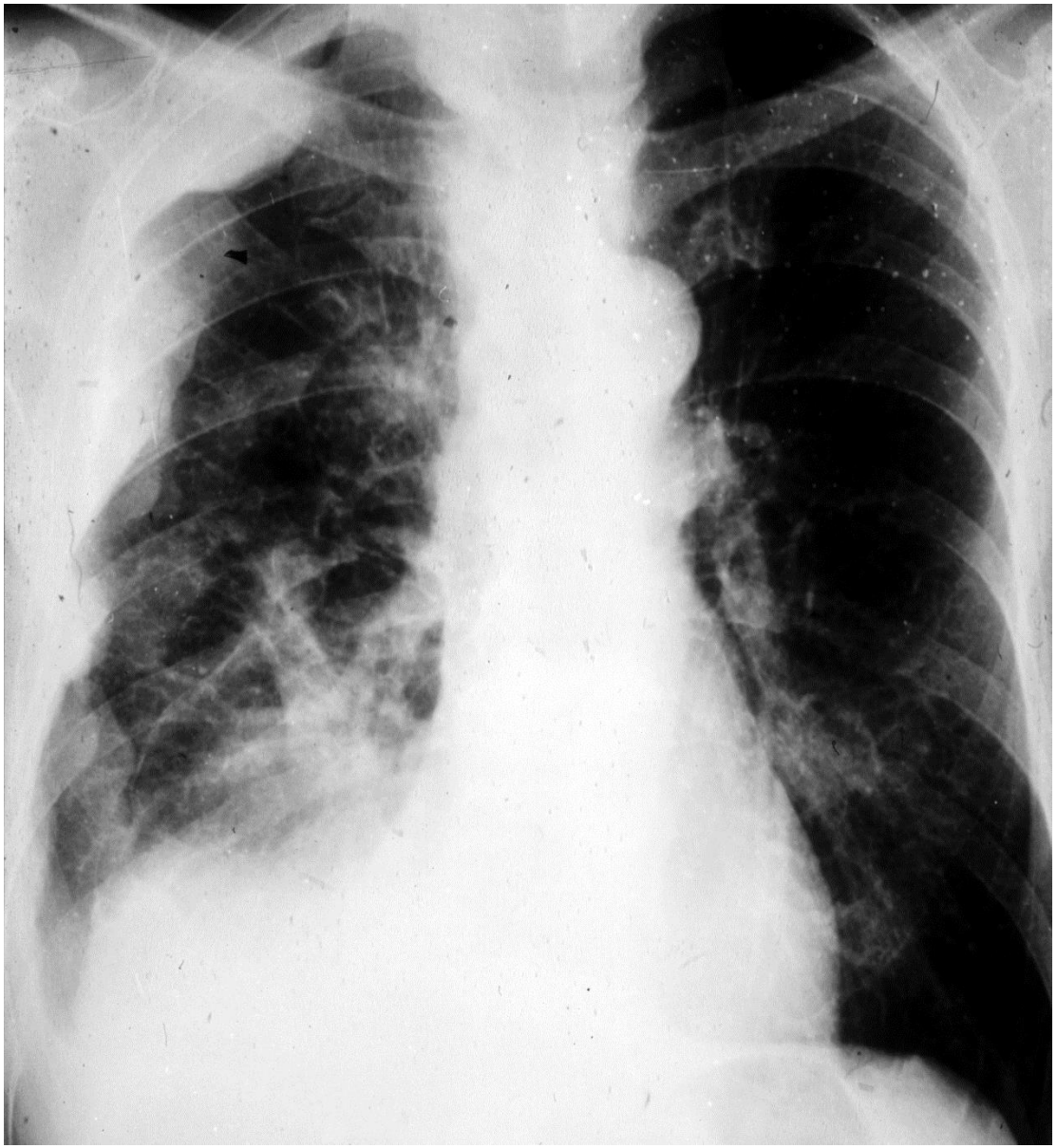
- synergy with smoking

		asbestos exposure	
		no	yes
smoking	no	1	5
	yes	10	50



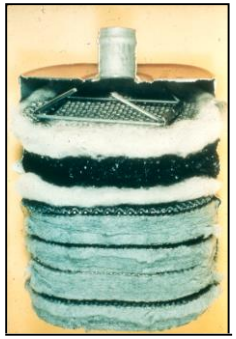
- **lung cancer is prescribed in cases of *asbestosis***
- **workers with lung cancer without asbestosis, but who have a history of *substantial asbestos exposure* have been added to the terms of prescription:**
  - **workers in asbestos textile manufacture**
  - **asbestos sprayers**
  - **asbestos insulation workers, including those applying and removing asbestos-containing materials in shipbuilding.**
- **for exposures occurring before 1975 workers should have been in the occupations listed for at least 5 years. For exposures occurring after 1975 workers should have been in the occupations listed for at least 10 years.**
- **now no reference to pleural thickening in the terms of prescription.**

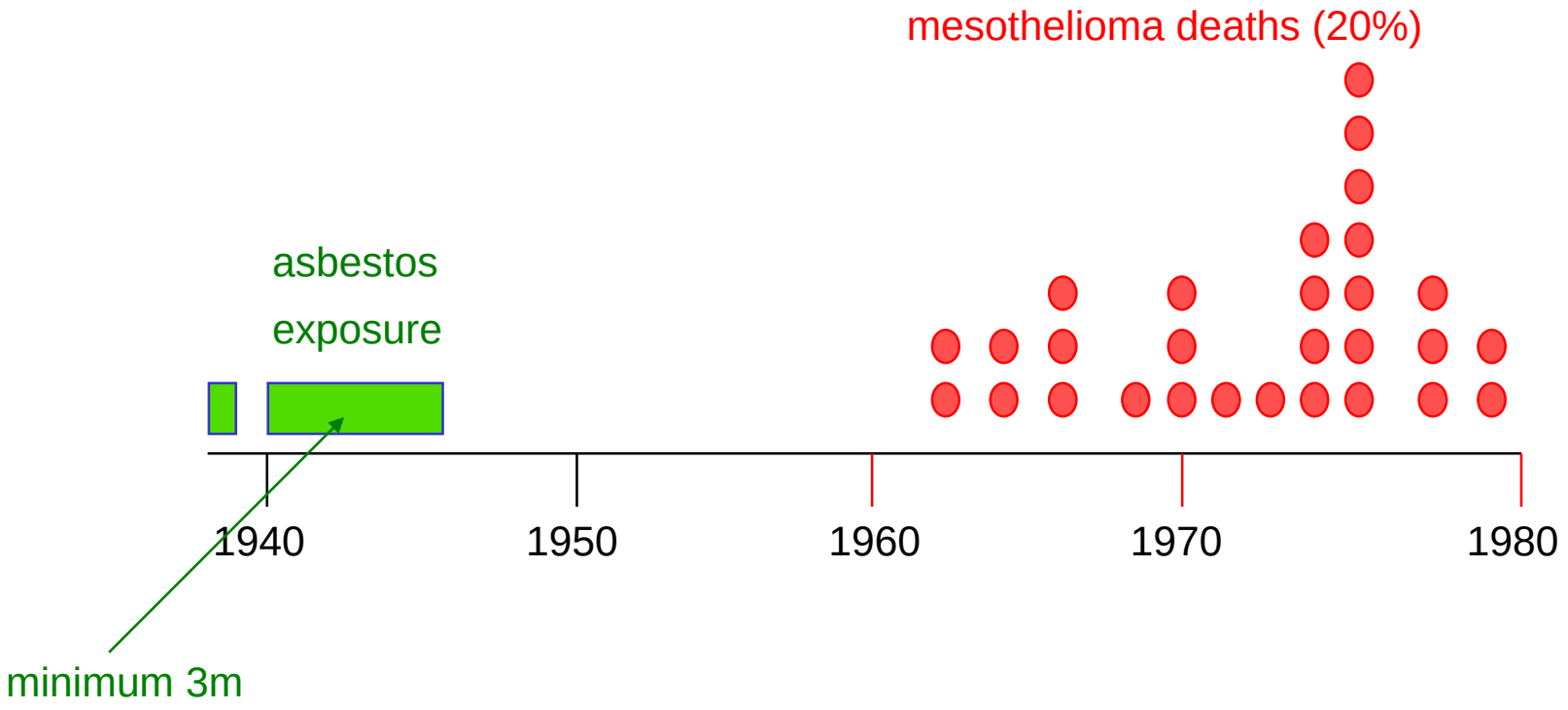




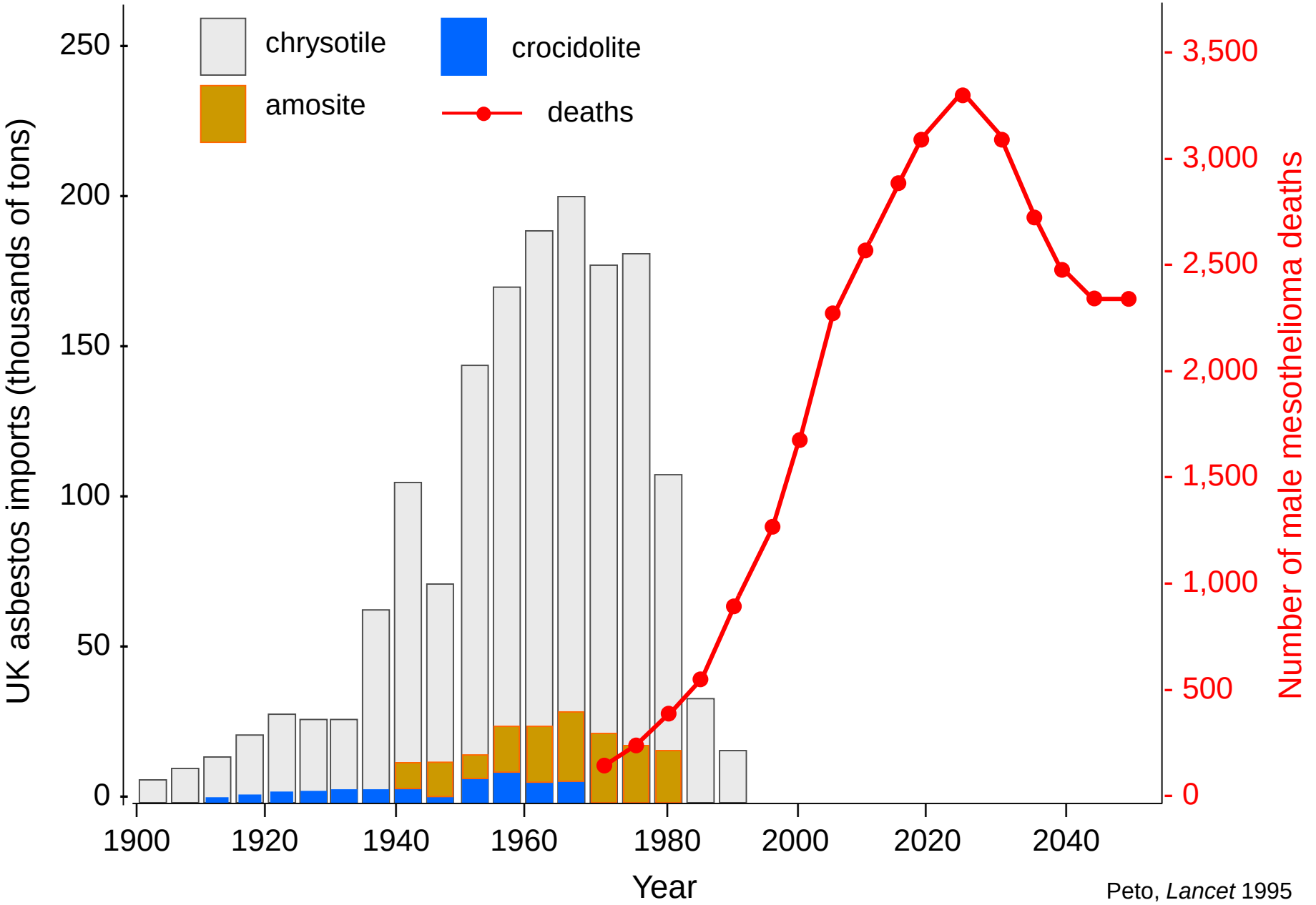
mesothelioma

Nottingham gas mask workers (crocidolite)





UK asbestos imports and predicted mesothelioma deaths in British men

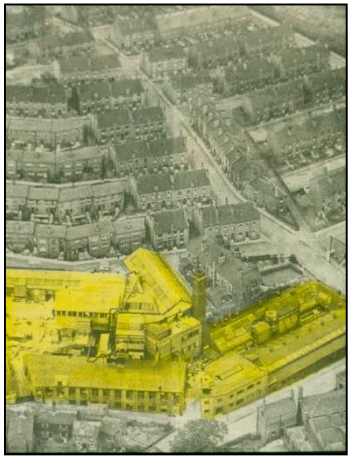


Peto, *Lancet* 1995

mesothelioma in contemporary UK

	OR
high risk (non-construction) • asbestos factory • lagging • shipbuilding/dockyard • Navy	16.8
carpenter	36.0
plumber, electrician, painter/decorator	14.6
other construction	7.9

unexplained:
14% of male cases
62% of female cases



35 year old man
foot through ‘asbestos’ garage roof
smoker

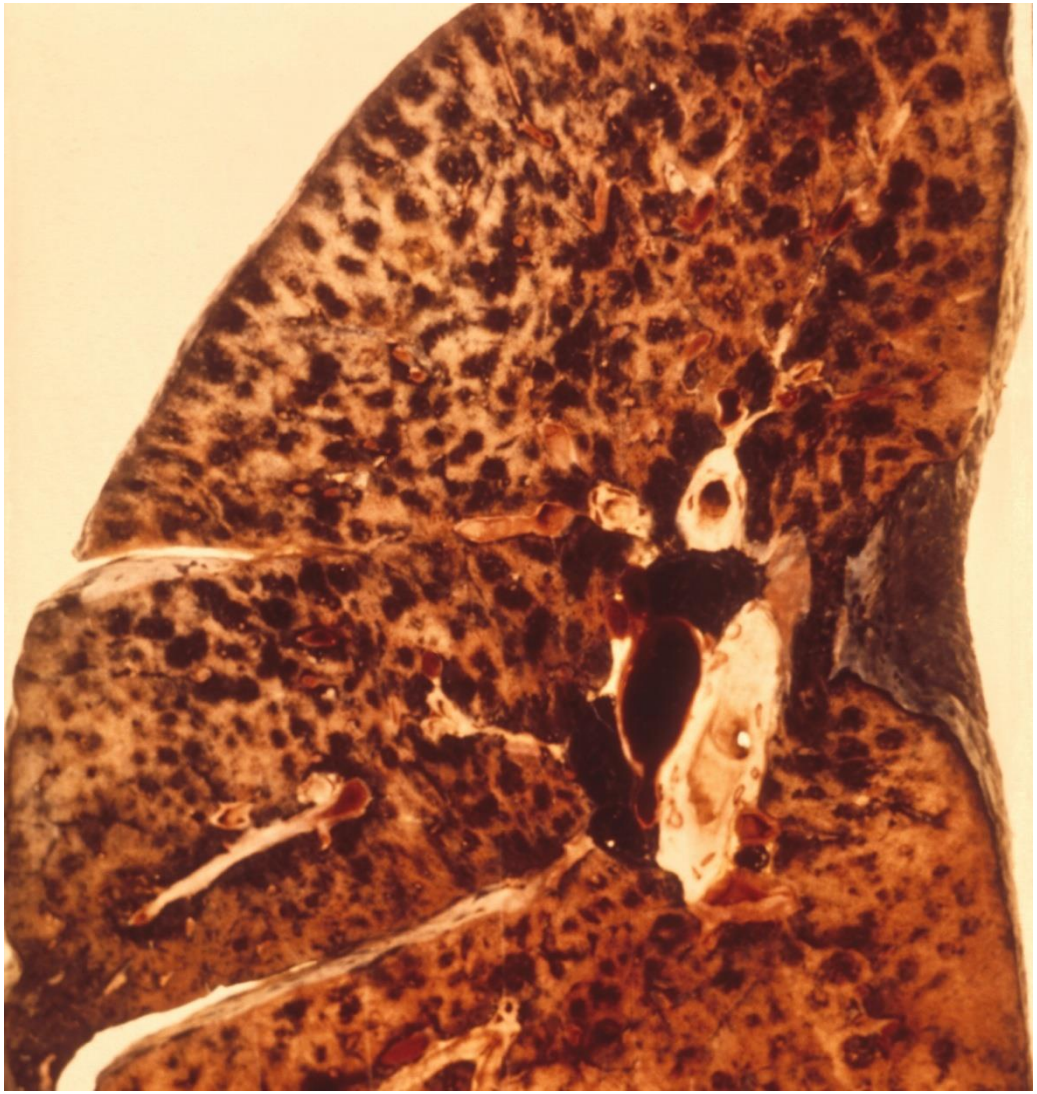
hence, asbestos:

pleural plaque
pleural effusion
diffuse pleural thickening
mesothelioma

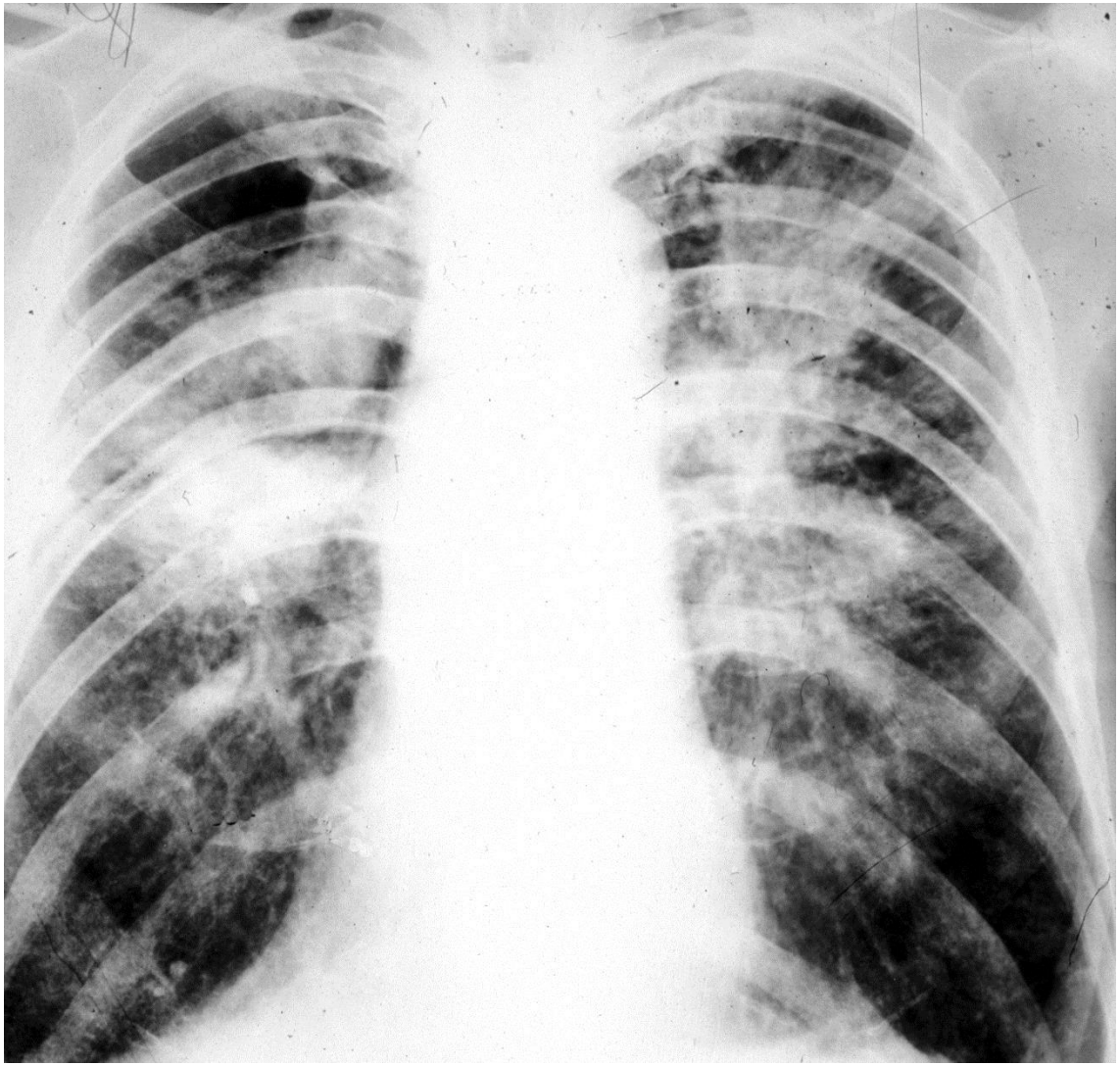
pneumoconiosis (asbestosis)

lung cancer

laryngeal cancer
ovarian cancer



coal workers lung



CWP - complicated
(‘progressive massive fibrosis’)

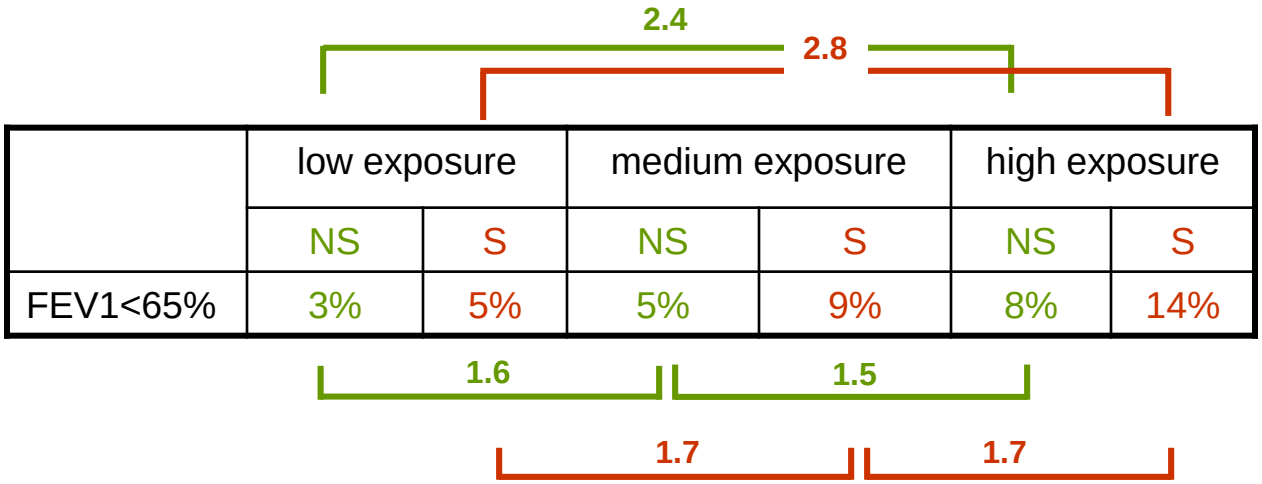
mortality among miners in Rhondda Fach: 20 years of follow-up

CXR category in 1950	SMR (all causes)
0	127
1	124
2	119
3	108

A	139
B/C	232

airflow obstruction in British coal miners

unrelated to pneumoconiosis



hence prescription rules for COPD in coal miners

- at least 20 years underground
- reduction in FEV1 of ≥1 litre (≈65% if FEV_1p=3L)

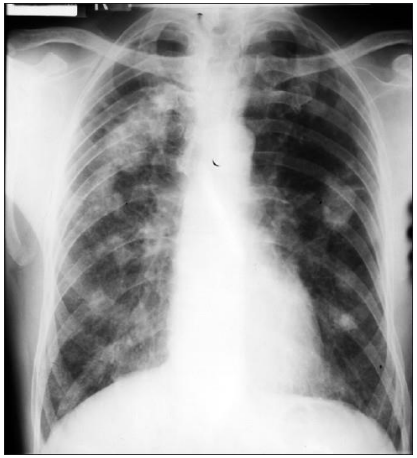
(no account of smoking for attribution)

hence, coal dust:

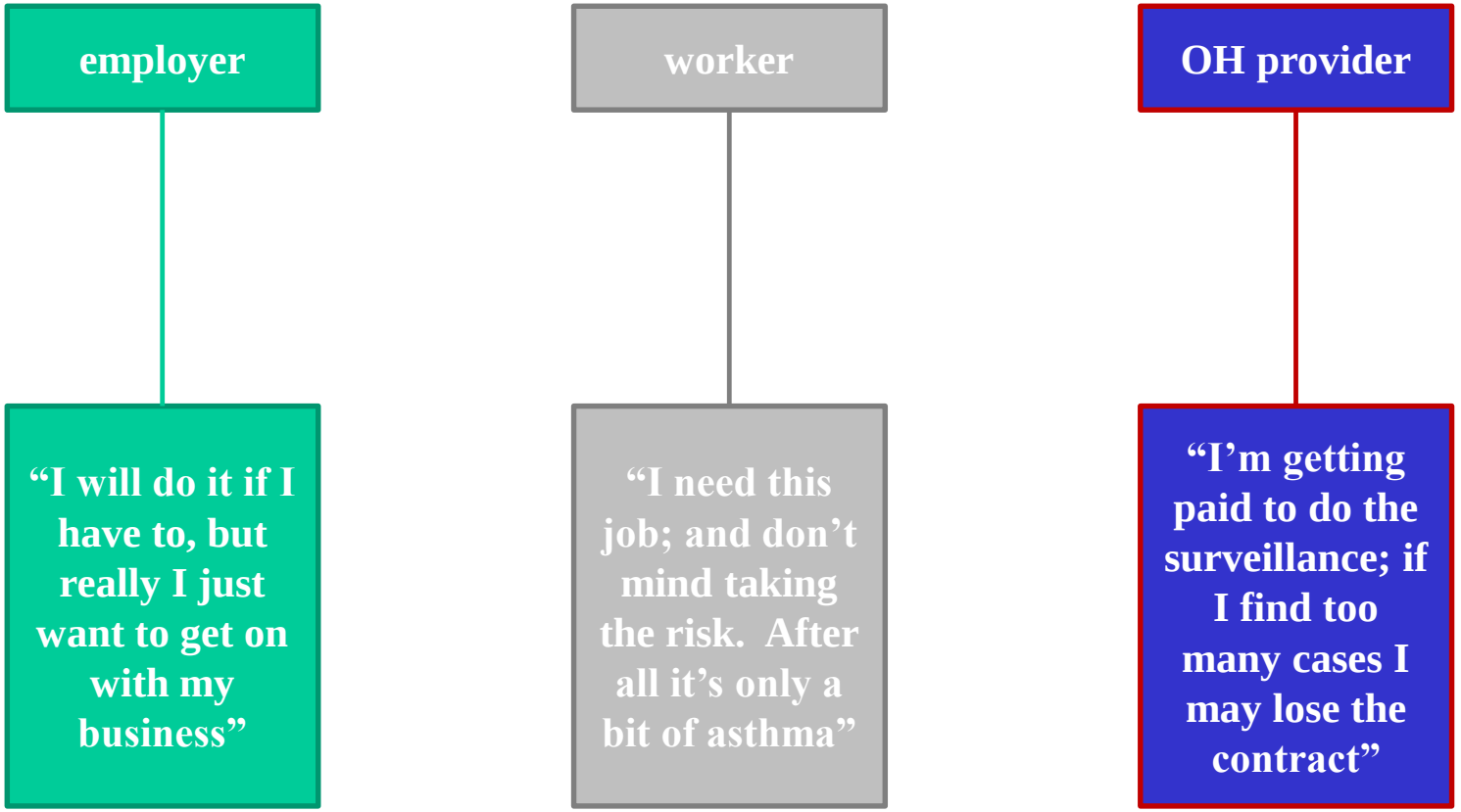
simple pneumoconiosis (CWP)
complicated pneumoconiosis (PMF)

Caplan's syndrome ('rheumatoid nodules')

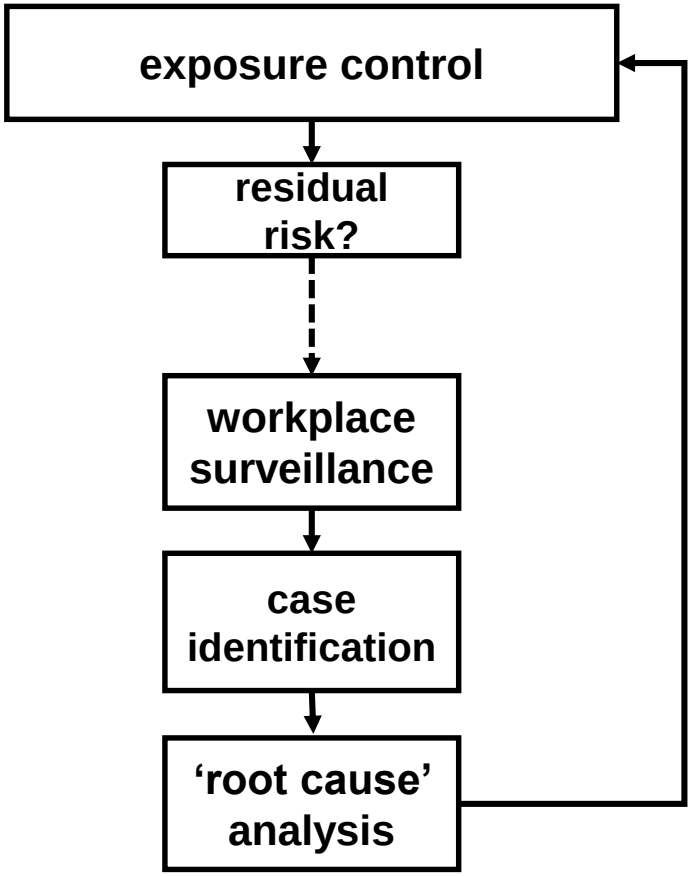
COPD



Three non-enthusiasts



In an ideal world …



What would HSE like (demand) you do for respiratory surveillance?

G401	COPD
G402	OA
G404	silica exposure
Control of Asbestos Regs 2012	asbestos exposure

Consider:

Category	Interpretation
1	Fit: Normal spirometry results. No evidence of respiratory illness likely to have a negative impact on employment.
2	Further investigation required/referral to Occupational Health Physician if employee has: • Abnormal spirometry: a drop of 20% from predicted VC and FVC • FEV1/FVC ratio of less than 80% • Any individual diagnosed asthmatic with impaired lung function • Any individual diagnosed with impaired lung function related to a respiratory disease or where it is likely lung function may deteriorate as part of the natural disease process • Any individual with a history of workplace respiratory sensitisation (asthma/rhinitis)

Interpreting ‘abnormal’ spirometry: longitudinal trend (basic)

- measurement technique
- same spirometer
- faulty spirometer

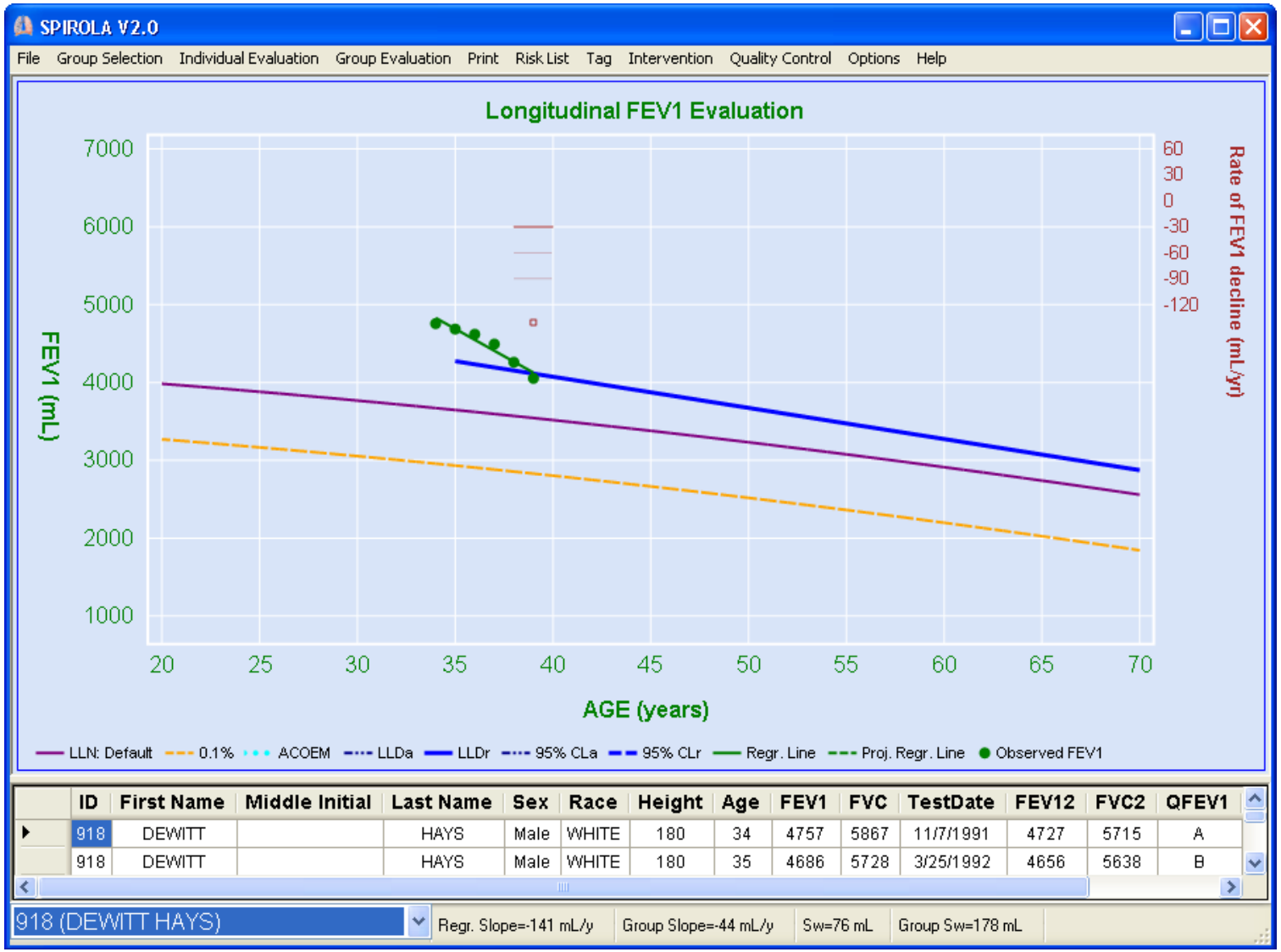
- rate of decline of FEV_1 *vs* noise (smoothed line of “normal” decline)
- reproducibility of duplicate measurements (4% or c.200 ml)

- accelerated loss of FEV_1 - two rules of thumb:
  - >200 ml over each of 2 successive years OR
  - ‘500 ml in five years’

- disease:
  - smoking
  - asthma
  - COPD
  - other

Interpreting ‘abnormal’ spirometry: using SPIROLA

http://www.cdc.gov/niosh/topics/spirometry/spirola.html



Guidance for doctors on the Control of Asbestos Regulations 2012

Medical surveillance for workers carrying out non-licensed work with asbestos

The purposes of medical surveillance are to:

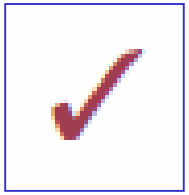
- provide workers with objective information about their current state of health;
- alert workers to any early indications of asbestos-related disease;
- to warn employees of the increased risk of lung cancer from the combined
- exposure of smoking and asbestos;
- alert employers or the patient's own GP, with signed consent, to any particular
- problems; *and*
- emphasise the need for employees to use available control measures and follow
- good working practices.

Regulation 22 of CAR12 requires that medical surveillance is 'adequate'. In order to comply with this, your examination should consist of:

- completion of the respiratory symptom **questionnaire** form;
- a clinical **examination**, with emphasis on the respiratory system, and particular reference to restriction of chest expansion, the presence of basal crackles and finger clubbing; *and*
- measurement of lung function, including FEV_1 and FVC.

G404

Health surveillance for those exposed to respirable crystalline silica (RCS)



COSHH essentials: General guidance

Control approach 4 Special

Silicosis

What would health surveillance involve?

- Health surveillance for silicosis could require chest x-rays at intervals in
- addition to enquiries about new or worsening breathing symptoms.
- Baseline assessment is always appropriate where there is a risk of
- silicosis. Discuss the need for a chest x-ray at the start of employment,
- with the health professional.
- Symptom enquiry is also needed where there is a risk of tuberculosis.

(Keep health records and the results of lung function tests for 40 years.)

Question 1

LUNGS AT WORK
www.lungsatwork.org.uk

67 year old man, ex-smoker
self-employed plumbing and heating engineer
gradual onset of exertional breathlessness since retiring two years ago

CXR

lung function:

	Predicted (L)	Actual - pre BD (L)	% predicted
FEV_1	2.90	1.90	70%
FVC	3.30	2.70	70%

Which of these is not likely to be a cause of his dyspnoea:

a. **pleural plaques**
b. **asbestosis**
c. **heart failure secondary to ischaemic heart disease**
d. **COPD**
e. **physical deconditioning**

Correct answer: a. pleural plaques

Cotton dust causes which one of the following occupational lung disease ?

a. byssinosis

b. berylliosis

c. bagassosis

d. baritosis

Correct answer: a. byssinosis

What is now the commonest cause of occupational HP in the UK?

a. mouldy hay

b. contaminated metal working fluid

c. avian proteins

d. green waste/compost

e. none of the above

Correct answer: b. contaminated metal working fluid

Which of these is true of occupational HP?

a. it is more common in atopic workers
b. it only occurs in immunocompromised individuals
c. it is commoner in non-smokers
d. eosinophils are prominent in lavage fluid

Correct answer: c. it is commoner in non-smokers.

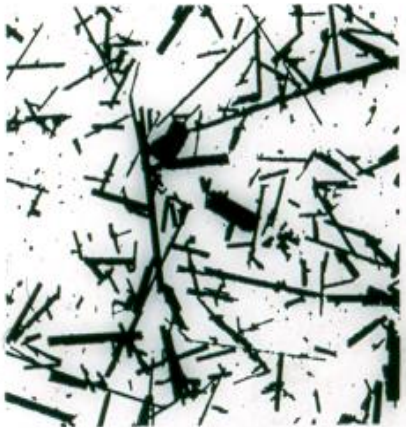
All of the following occupational lung diseases are related to welding exposure *except*:

a. hypersensitivity pneumonitis
b. pneumococcal pneumonia
c. occupational asthma
d. lung cancer
e. metal fume fever

Correct answer: a. hypersensitivity pneumonitis

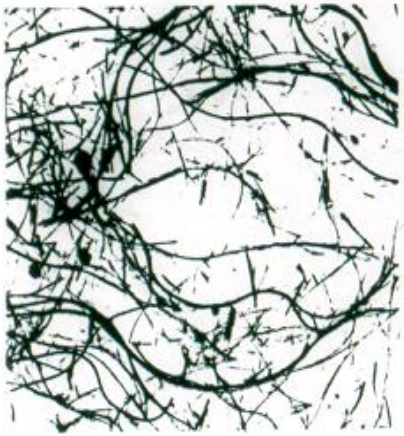
Which of the following electron micrographs depicts chrysotile?

a)



b)

c)



d)

Correct answer: c)

Pneumoconiosis and related OLD

South west regional training day
September 2018

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