資料6

OCCUPATIONAL SAFETY AND HEALTH SERIES No. 22 (Rev. 2000)

GUIDELINES FOR THE USE OF THE ILO INTERNATIONAL CLASSIFICATION OF RADIOGRAPHS OF PNEUMOCONIOSES

Revised edition 2000

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INTERNATIONAL LABOUR OFFICE · GENEVA

Two letters must be used to record shape and size. Thus, if the reader considers that all, or virtually all, opacities seen are of one shape and size, then this is noted by recording the letter twice, separated by an oblique stroke (for example **q/q**). If, however, significant numbers of another shape or size are seen, then this is recorded by writing a different letter after the oblique stroke (for example **q/t**); **q/t** would mean that the predominant small opacities are rounded and of size **q**, but that there are significant numbers of small irregular opacities present of size **t**. In this way, any combination of small opacities may be recorded.[6] When small opacities of different shapes and/or size are seen, the letter for the predominant shape and size (primary) is recorded before the oblique stroke, while the letter for the less frequently occurring shape and size (secondary) is recorded after the oblique stroke.

Large opacities

A large opacity is defined as an opacity having the longest dimension exceeding 10 mm. Categories of large opacities are defined below. These definitions take precedence over the examples of large opacities illustrated on standard radiographs.

Category **A** One large opacity having the longest dimension up to about 50 mm, or several large opacities with the sum of their longest dimensions not exceeding about 50 mm.

Category **B** One large opacity having the longest dimension exceeding 50 mm but not exceeding the equivalent area of the right upper zone, or several large opacities with the sum of their longest dimensions exceeding 50 mm but not exceeding the equivalent area of the right upper zone.

Category **C** One large opacity which exceeds the equivalent area of the right upper zone, or several large opacities which, when combined, exceed the equivalent area of the right upper zone.

3.3. Pleural abnormalities

Pleural abnormalities are divided into pleural plaques (localized pleural thickening), costophrenic angle obliteration and diffuse pleural thickening.

Pleural plaques (localized pleural thickening)

Pleural plaques represent localized pleural thickening, generally of the parietal pleura. Pleural plaques may be seen on the diaphragm, on the chest wall (in-profile or face-on), and at other sites. At times, they are recognized only by their calcification. Pleural plaques are recorded as absent or present. If present on the chest wall, they are recorded as in-profile or face-on, and separately for the right and left sides. A minimum width of about 3 mm is required for an in-profile plaque to be recorded as present.[7,8]

[6] See Appendix E for possible combinations.

[7] The measurement of width is made from the innermost margin of the rib to the innermost sharp margin of the plaque at the pleural-parenchymal boundary.

[8] If more detailed measurement of width is required for a particular study, three categories may be used:
a – about 3 mm up to about 5 mm;
b – about 5 mm up to about 10 mm;
c – over about 10 mm.

Site, calcification and extent of pleural plaques are recorded separately for the right and for the left side of the chest. The written guidelines describing these features take precedence over the examples provided on the standard radiograph.

Site

The sites (locations) of pleural plaques include chest wall, diaphragm and other sites. Other sites include the mediastinal pleura in the para-spinal or para-cardiac locations. The presence or absence of pleural plaques is recorded for all sites, and separately for the right and for the left sides.

Calcification

Radiographic images of pleural plaques may include recognizable areas of calcification. The presence or absence of calcification is recorded for all plaques, and separately for the right and for the left sides. When calcification is seen, a plaque is also recorded as present at that site.

Extent

Extent is not recorded for plaques on the diaphragm or at other sites. It is recorded only for plaques along the chest wall, and is combined for both in-profile and face-on varieties. Extent is defined in terms of the total length of involvement with respect to the projection of the lateral chest wall (from the apex to the costophrenic angle) on the postero–anterior chest radiograph:

1 = total length up to one-quarter of the projection of the lateral chest wall;

2 = total length exceeding one-quarter and up to one-half of the projection of the lateral chest wall;

3 = total length exceeding one-half of the projection of the lateral chest wall.

Costophrenic angle obliteration

Costophrenic angle obliteration is recorded as either present or absent, separately for the right and for the left side. The lower limit for recording costophrenic angle obliteration is defined by the standard radiograph showing profusion subcategory **1/1 t/t**. If the pleural thickening extends up the lateral chest wall from the obliterated costophrenic angle, the thickening should be classified as diffuse pleural thickening. Costophrenic angle obliteration may occur without diffuse pleural thickening.

Diffuse pleural thickening

Diffuse pleural thickening historically has referred to thickening of the visceral pleura. The radiological distinction between parietal and visceral pleural thickening is not always possible on a postero–anterior radiograph.

For the purpose of the ILO (2000) Classification, diffuse pleural thickening extending up the lateral chest wall is recorded *only* in the presence of, and in continuity with, an obliterated costophrenic angle. Diffuse pleural thickening is recorded as absent or present along the chest wall. If present, it is recorded as in-profile or face-on, and separately for the right and the left side. Its extent is recorded in the same manner as for pleural plaques. A minimum width of about 3 mm is required for in-profile diffuse pleural

thickening to be recorded as present. If detailed measurement of its width is required for a particular study, see the comment provided in footnote 8.

Calcification and extent of diffuse pleural thickening on the chest wall are recorded separately for the right and for the left side (see guidelines for pleural plaques). The pleura may often be seen at the apex of the lung and should not be recorded as part of diffuse pleural thickening of the chest wall.

3.4. Symbols

Symbols to record radiographic features of importance are listed below. Their use is relevant because they describe additional features related to dust exposure and other aetiologies. Use of these symbols is obligatory.[9]

Some of the symbols imply interpretations, rather than just descriptions, of what is seen on the radiograph. A postero–anterior chest radiograph on its own may not be sufficient to justify definitive interpretation; therefore, each of the following definitions of symbols assumes an introductory qualifying word or phrase such as "changes indicative of", or "opacities suggestive of", or "suspect".

The symbols are:

aa atherosclerotic aorta
at significant apical pleural thickening (see Appendix D)
ax coalescence of small opacities[10]
bu bulla(e)
ca cancer: thoracic malignancies excluding mesothelioma
cg calcified non-pneumoconiotic nodules (e.g. granuloma) or nodes
cn calcification in small pneumoconiotic opacities
co abnormality of cardiac size or shape
cp cor pulmonale
cv cavity
di marked distortion of an intrathoracic structure
ef pleural effusion
em emphysema
es eggshell calcification of hilar or mediastinal lymph nodes
fr fractured rib(s) (acute or healed)
hi enlargement of non-calcified hilar or mediastinal lymph nodes
ho honeycomb lung
id ill-defined diaphragm border[11]
ih ill-defined heart border[12]
kl septal (Kerley) lines
me mesothelioma

[9] Inclusion of this information in statistical analyses of results may help to explain otherwise inexplicable variation between readers in their classifications of the same radiographs.

[10] The symbol **ax** represents coalescence of small opacities with margins of the small opacities remaining visible, whereas a large opacity demonstrates a homogeneous opaque appearance.The symbol ax (coalescence of small opacities) may be recorded either in the presence or in the absence of large opacities.

[11] The symbol **id** (ill-defined diaphragm border) should be recorded only if more than one-third of one hemidiaphragm is affected.

[12] The symbol **ih** (ill-defined heart border) should be recorded only if the length of the heart border affected, whether on the right or on the left side, is more than one-third of the length of the left heart border.

READING SHEET FOR
COMPLETE ILO (2000) INTERNATIONAL CLASSIFICATION OF RADIOGRAPHS OF PNEUMOCONIOSES

READER CODE

RADIOGRAPH IDENTIFIER

DATE OF READING

DATE OF RADIOGRAPH

TECHNICAL QUALITY

Grade 1, 2, 3 or 4 (Mark appropriate box) 1 2 3 4

If grade not 1, **Comment** *required here*

Comment on technical quality:

PARENCHYMAL ABNORMALITIES

Small opacities

Profusion (12-point scale)

0/- 0/0 0/1 1/0 1/1 1/2 2/1 2/2 2/3 3/2 3/3 3/+

(Consult standard radiographs — mark profusion subcategory.)

Affected zones

(Mark ALL affected zones)

	R	L
Upper		
Middle		
Lower		

Shape and size: p, q, r, s, t or u
(Consult standard radiographs. Two symbols required; mark one primary and one secondary.)

	Primary	Secondary
	p s	p s
	q t	q t
	r u	r u

Large opacities Mark 0 for none or mark A, B, or C 0 A B C

PLEURAL ABNORMALITIES Yes No

If "No" go to *SYMBOLS

(0=None R=Right L=Left)

PLEURAL PLAQUES

	Site (Mark appropriate boxes)	*Calcification (Mark)*	*Extent (chest wall; combined for in-profile and face-on)* up to ¼ of lateral chest wall = 1; ¼ to ½ of lateral chest wall = 2; > ½ of lateral chest wall = 3	*Width (optional)* (3 mm minimum width required) 3 to 5 mm = a; 5 to 10 mm = b; > 10 mm = c
Chest wall in profile	0 R L	0 R L	0 R 0 L 1 2 3 1 2 3	R L a b c a b c
face-on	0 R L	0 R L		
Diaphragm	0 R L	0 R L		
Other site(s)	0 R L	0 R L		

COSTOPHRENIC ANGLE OBLITERATION [0] [R] [L]

DIFFUSE PLEURAL THICKENING *(Mark appropriate boxes)*	*Calcification (Mark)*	*Extent (chest wall; combined for in-profile and face-on)* up to ¼ of lateral chest wall = 1; ¼ to ½ of lateral chest wall = 2; > ½ of lateral chest wall = 3	*Width (optional)* (3 mm minimum width required) 3 to 5 mm = a; 5 to 10 mm = b; > 10 mm = c
Chest wall in profile [0] [R] [L]	[0] [R] [L]	[0] [R] [0] [L]	[R] [L]
		[1] [2] [3] [1] [2] [3]	[a] [b] [c] [a] [b] [c]
face-on [0] [R] [L]	[0] [R] [L]		

*SYMBOLS
aa at ax bu ca cg cn co cp cv di ef em es
fr hi ho id ih kl me pa pb pi px ra rp tb od

Yes [ ] No [ ]
(Circle as appropriate; if **od** *circled,* COMMENT *must be made below)*

COMMENTS

Yes [ ] No [ ]

READING SHEET FOR
ABBREVIATED ILO (2000) INTERNATIONAL CLASSIFICATION OF RADIOGRAPHS OF PNEUMOCONIOSES

READER CODE [ ] [ ]

RADIOGRAPH IDENTIFIER [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ]

DATE OF READING [ ] [ ]–[ ] [ ]–[ ] [ ] [ ] [ ] [ ]

DATE OF RADIOGRAPH [ ] [ ]–[ ] [ ]–[ ] [ ] [ ] [ ] [ ]

TECHNICAL QUALITY
Grade 1, 2, 3 or 4

(Mark appropriate box) [1] [2] [3] [4]
If grade not 1, **Comment** *required here*

Comment on technical quality:

PARENCHYMAL ABNORMALITIES

Small opacities

Profusion (4-point scale)
(Consult standard radiographs — mark profusion category) [0] [1] [2] [3]

Predominant shape and size p, q, r, s, t or u
(Consult standard radiographs) (Mark only one box)

[p] [s]
[q] [t]
[r] [u]

Large opacities Mark 0 for none or mark A, B or C [0] [A] [B] [C]

PLEURAL ABNORMALITIES

(0 = None R = Right L = Left)

Yes ☐ No ☐

If "No" go to *SYMBOLS

Pleural thickening — PT [0] [R] [L]

Pleural calcification — PC [0] [R] [L]

*SYMBOLS

Yes ☐ No ☐

aa at ax bu ca cg cn co cp cv di ef em es

fr hi ho id ih kl me pa pb pi px ra rp tb od

(Circle as appropriate; if **od** *circled,* COMMENT *must be made below)*

COMMENTS

Yes ☐ No ☐

Appendix C – Description of standard radiographs

The Complete Set (22 radiographs)

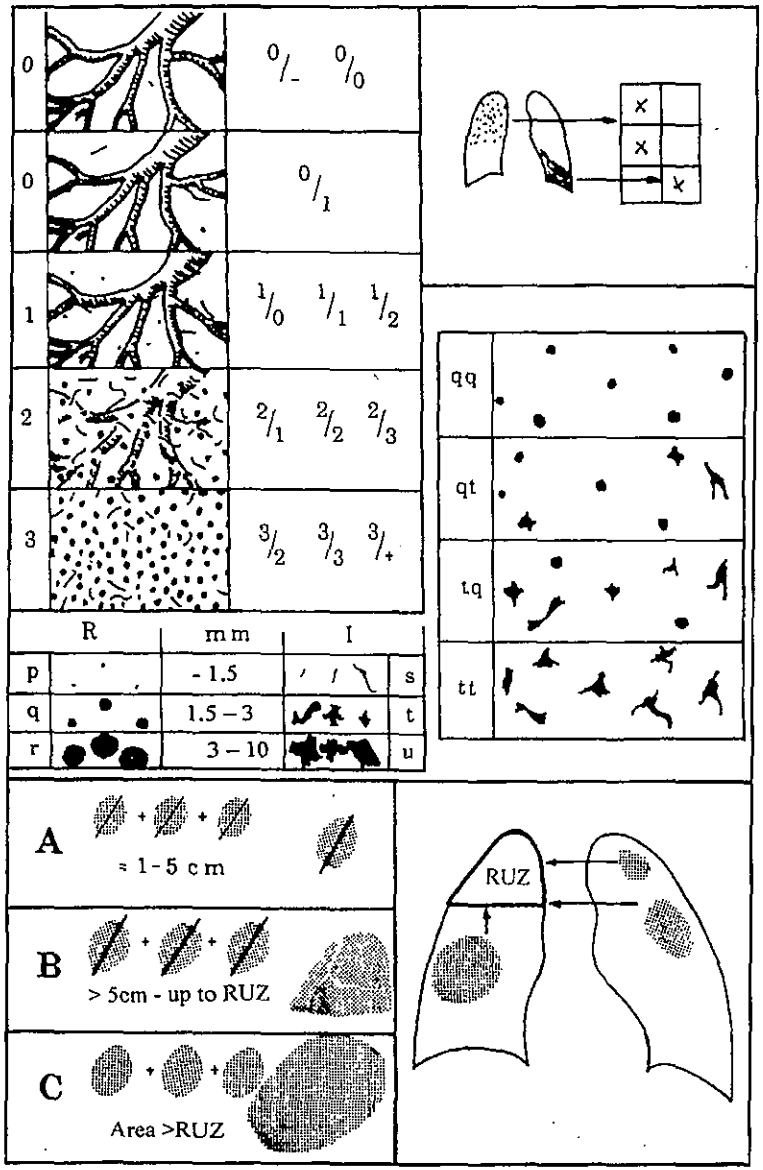
The ILO (2000) International Classification of Radiographs of Pneumoconioses is accompanied by 22 standard radiographs. Two of them illustrate category **0/0** profusion of small opacities. Fifteen others define small-opacity profusion categories (**1/1**, **2/2** and **3/3**), and some of the shapes and sizes of these opacities (**p**, **q**, **r**, **s**, and **t**). Large opacities (categories **A**, **B** and **C**) are shown on three additional radiographs. These 20 radiographs are described in the following table using the conventions defined in the preceding text and including Comments. The site of small opacities is shown by a tick in the boxes symbolizing the zones of the lungs, as follows:

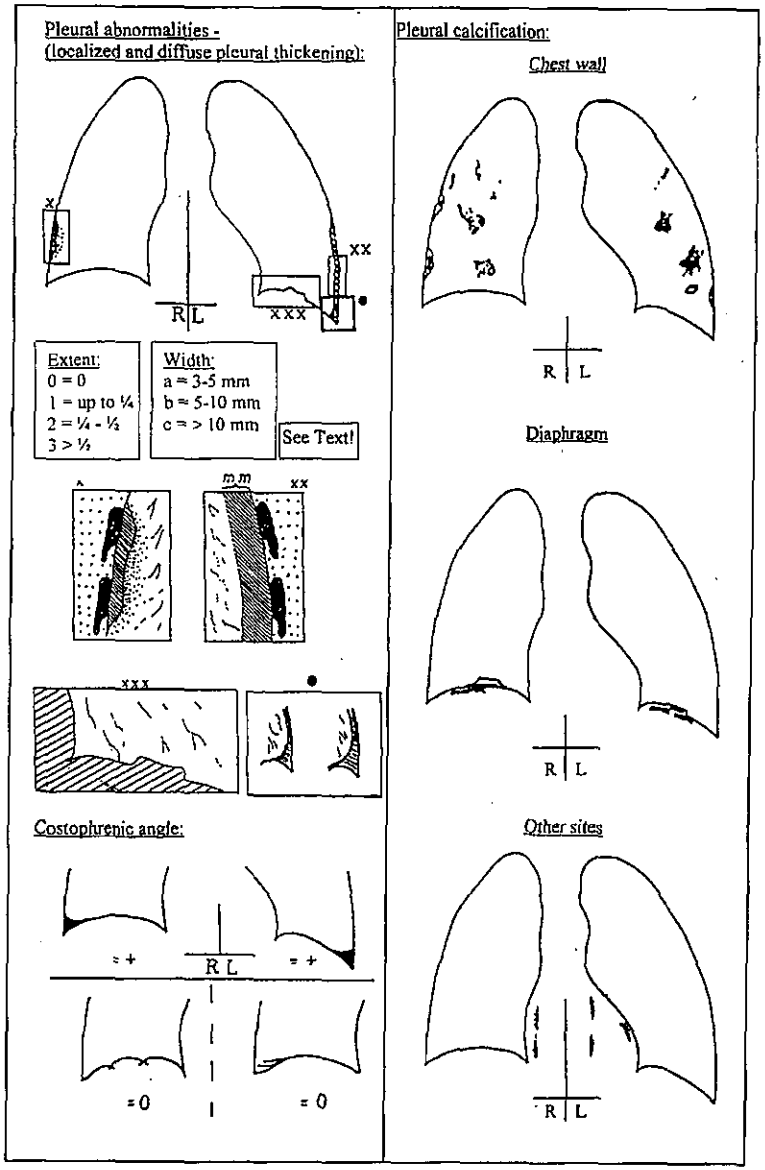
	Right	Left
Upper	☐	☐
Middle	☐	☐
Lower	☐	☐

The two remaining standard radiographs are composite reproductions of sections from full-size chest radiographs. One depicts increasing profusion of irregular small **u**-sized opacities. The other illustrates various pleural abnormalities.

The radiographs that define the small-opacity profusion categories are copies of the same standards that were published in 1980, thus preserving continuity and consistency in the Classification. As noted in footnote 3 on page 3, the standard radiographs were chosen to demonstrate the radiographic features of the pneumoconioses, rather than to demonstrate technical quality.

The descriptions of the radiographs in the following table are the consensus views of a group of experts who reassessed the standards in the year 2000. These descriptions differ in some respects from those published in the earlier (1980) edition of the Classification. Judgements about the technical quality of the radiographs reflect familiarity with current optimal techniques and thus may appear more severe, with only six graded *1* (good). Descriptions of pleural abnormalities now follow the modified conventions that are defined in these *Guidelines* (section 3.3). The Comments in the right-hand column of the table include some additional observations by the reviewers.


0
0
1
2
3
0/- 0/0
0/1
1/0 1/1 1/2
2/1 2/2 2/3
3/2 3/3 3/+
R
mm
I
p
q
r
- 1.5
1.5 – 3
3 – 10
s
t
u
qq
qt
tq
tt
A
≈ 1 - 5 cm
B
> 5cm - up to RUZ
C
Area >RUZ
RUZ


Pleural abnormalities -
(localized and diffuse pleural thickening):
R L
xx
xxx
Extent:
0 = 0
1 = up to ¼
2 = ¼ - ½
3 > ½
Width:
a = 3-5 mm
b = 5-10 mm
c = > 10 mm
See Text!
mm
xx
xxx
Costophrenic angle:
= +
= +
R L
= 0
= 0
Pleural calcification:
Chest wall
R L
Diaphragm
R L
Other sites
R L