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**International Statistical Classification of  
Diseases and Related Health Problems (ICD-10)  
in Occupational Health**

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**INTERNATIONAL STATISTICAL  
CLASSIFICATION OF DISEASES AND  
RELATED HEALTH PROBLEMS (ICD-10)  
IN OCCUPATIONAL HEALTH**

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World Health Organization  
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1999

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## Preface

Classifications of occupational diseases have been developed mainly for two purposes: (1) notification for labour safety and health surveillance and (2) compensation. The absence of unified diagnostic criteria, coding systems and classifications reduce the compatibility and comparability of national statistics on occupational diseases. The main purpose of this document is to serve as a guideline for the use of ICD-10 in notification of occupational diseases in countries which do not have a well-established notification system. The document contains general guidelines for the use of ICD-10 codes and a comprehensive list of ICD-10 codes which are relevant for notification of occupational diseases. The list enables one to select, for each country, a selection of occupational disease entities that are the most relevant when building a notification system for that country. The document also provides typical examples of the causative agents/risk factors and risk industries/occupations for each occupational disease. It is to be underlined that these lists are meant to be only examples and should not be taken as exhaustive. In order to increase the comparability of occupational diseases statistics, a detailed and specific enough coding of the medical diagnosis should be used. In this respect, the guidelines presented in this document could be helpful also in countries already possessing a notification system for occupational diseases. As the document is focused on the use of ICD-10 in the notification of occupational diseases, the use of ICD-10 in the notification of occupational injuries is only briefly described.

In 1997 WHO in co-operation with NIOSH (USA) prepared a draft document on the use of ICD-10 in Occupational Health. A group of experts reviewed the draft at an international consultation on “Strengthening of Health Surveillance of Working Populations – The use of International Statistical Classification of Diseases (ICD-10) in Occupational Health”, held in Geneva, 8-10 July, 1998. The consultation proposed some improvements and the report was finalised by the Finnish Institute of Occupational Health.

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# 1. Introduction

## 1.1 Classification and notification of occupational diseases

### Classification

An occupational disease is not characterised merely by the disease itself, but by a combination of a disease and an exposure, as well as an association between these two. Classifications of occupational diseases have been developed mainly for two purposes: (A) surveillance and notification for labour inspection purposes and (B) social security (compensation) purposes. The majority of the classification systems have the following hierarchy (1,2):

1. Diseases caused by agents
  - 1.1 Diseases caused by chemical agents
  - 1.2 Diseases caused by physical agents
  - 1.3 Diseases caused by biological agents
2. Diseases by target organ
  - 2.1 Occupational respiratory diseases
  - 2.2 Occupational skin diseases
  - 2.3 Occupational musculoskeletal diseases
3. Occupational cancer
4. Others

The classifications contain both categories defined by the causative agent and categories defined by the medical diagnosis. Cases of a given disease may therefore fall into several categories. The absence of unified diagnostic criteria, coding system and classification reduce the compatibility and comparability of national statistics on occupational diseases. Even for classical occupational diseases like asbestosis, there is heterogeneity in the national statistics and clinical practice in what kind of conditions are coded under the general heading of asbestosis (3).

### Notification

In addition to the diagnosis of occupational disease, additional information should be included in the notification. ILO has defined the minimum information to be included (1):

- (a) enterprise, establishment and employer
  - (i) name and address of the employer
  - (ii) name and address of the enterprise
  - (iii) name and address of the establishment
  - (iv) economic activity of the establishment
  - (v) number of workers (size of the establishment)
- (b) person affected by the occupational disease
  - (i) name, address, sex and date of birth
  - (ii) employment status
  - (iii) occupation at the time when the disease was diagnosed
  - (iv) length of service with the present employer

(c) occupational disease

- (i) name and nature of the occupational disease
- (ii) harmful agents, processes or exposure to which the occupational disease is attributable
- (iii) description of work which gave rise to the condition
- (iv) length of exposure to harmful agents and processes
- (v) date of diagnosis of the occupational disease

The coding and classification of the above information can mostly be done according to the same guidelines as in accidents at work (4). These guidelines, however, do not contain classification systems for the diagnosis of the disease and for the agents and exposures that are relevant for occupational diseases. The central role of ICD (International Statistical Classification of Diseases and Related Health Problems) throughout health care and in health statistics make it the natural choice for coding of the medical diagnosis also in the notification of occupational diseases.

## 1.2 The background and purpose of the present document

In May 1996 the World Health Assembly approved a Resolution on Global Strategy for Occupational Health for All (WHA 49.12). One of the objectives of the Strategy required the establishment of registration and data systems in occupational health. In 1997 WHO in co-operation with NIOSH (USA) prepared a draft document on the use of ICD-10 in Occupational Health. A group of experts reviewed the draft in a 3-day meeting in July 1998 in Geneva and proposed some improvements. The draft was finalised according to these comments by the Finnish Institute of Occupational Health.

The main purpose of this document is to serve as a guideline for the use of ICD-10 in notification of occupational diseases in countries which do not have a well-established notification system. For such purposes it may be practical for each country to first create a notification system for a selection of occupational disease entities that are the most important in that country. Although the main aim is to guide the coding of the adverse medical effects, the document is not only a list of medical diagnoses and corresponding ICD-10 codes, but provides also typical examples of the causative agents/risk factors and risk industries/occupations for these diseases. The lists of agents, exposures, industries and occupations presented in the document should not be taken as exhaustive. New agents and new risk industries emerge, and for complete updated lists of causative agents and risk industries the interested reader should also refer to recent textbooks and related publications (e.g. 5,6,7,8).

In order to increase the comparability of occupational diseases statistics, a detailed and specific enough coding of the medical diagnosis should be used. In this respect, the guidelines presented in this document could be helpful also in countries already possessing a notification system for occupational diseases. Reference should, however, be made to the national legislation.

There is no generally accepted international exposure classification available. Some ICD-10 codes contain information on the exposure (E.g. J61 Asbestosis). Chapter XX of ICD-10 (External causes of morbidity and mortality, V01-Y98) also offers some exposure codes that are relevant for work-related diseases (see section A.16). Yet it is evident that the selection of these codes does not provide a basis for an exposure classification that would be detailed and comprehensive enough. There is a need to develop such a classification. Meanwhile, if a more detailed coding than that in Chapter XX of ICD-10 is needed, it is recommended to code the exposures according to the national or local coding systems.

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## 1.3 Notification of occupational injuries

This document is focused on the use of ICD-10 in the notification of occupational diseases and other similar health problems. Guidelines for statistics of occupational injuries, whether from notification systems or from other types of sources, have recently been thoroughly reviewed by the International Labour Office (4). The guidelines refer to ICD-10 in the classifications of *Type of injury* and *Part of the body injured*. Chapter XIX of ICD-10 deals with Injury, poisoning and certain other consequences of external causes. Codes of the chapter are relevant for the coding of injury type and part of the body injured. The codes, however, are mostly combinations of these two classifications (e.g. S51.0 Open wound of the elbow). This makes the use of the codes cumbersome, particularly when information is needed for all cases of injury to a particular part of the body, or for all cases of a particular type of injury, regardless of the part of body injured. Therefore the ILO guidelines present separate classifications for *Type of injury* and *Part of the body injured*, which however both are based on ICD-10.

Chapter XX of ICD-10 contains codes which permit the classification of environmental events and circumstances as the cause of injury, poisoning and other adverse effects. Such codes are useful for example in the coding of accidents at work (e.g. X13 Contact with steam and hot vapours) and commuting accidents (e.g. V04 Pedestrian injured in collision with heavy transport vehicle or bus). In addition to the core codes, chapter XX also offers an additional subdivision according to *Place of occurrence* for some of the codes and an additional (optional) *Activity code* to indicate the activity of the injured person at the time the event occurred. It is to be noted, however, that the ILO statistical guidelines point out a need for further development of these two and some related classifications describing the circumstances leading to the occupational injury (4).

The information to be included in the notification of occupational injuries follows the same logic as described for occupational diseases in section 1.1, but is not further dealt in this document. The codes of chapters XIX and XX are dealt only when relevant for notification of occupational diseases and related health problems. A reader interested in notification of occupational injuries is recommended to look closer at chapters XIX and XX of ICD-10 as well as to references 1 and 4.

## 2. ICD-10

ICD-10 is the last edition of the International Statistical Classification of Diseases and Related Health Problems published by WHO (9). It is a system of categories to which morbid entities are assigned according to established criteria. The ICD is used to translate diagnoses of diseases and other health problems from words into an alphanumeric code, which permits easy storage, retrieval and analysis of the data. In practice ICD has become the international standard diagnostic classification for all general epidemiological and many health management purposes.

### 2.1 General structure and guidelines of ICD-10 coding

The core classification of ICD-10 is the three-character code, which is the mandatory level of coding for international reporting to the WHO mortality database and for general international comparisons. The four-character subcategories, while not mandatory for reporting at the international level, are recommended for many purposes. Many of the four-character categories are relevant in work-related settings and are therefore listed in this document. Because it is not possible to present all possible subcategories of the relevant three-character categories, the following formats are used in this document:

- J45.- Indicates that this code is subdivided in ICD-10. The most relevant subcategories from the point of view of occupational health are listed below the main category, but for the complete selection of available subcategories the reader should refer to ICD-10
- J61 A code which is not subdivided in ICD-10

For dataprocessing purposes it may be useful to extend the three-character codes to the same length as the four-character codes. ICD-10 recommends using the letter “X” for this, but this practice is not followed by all countries.

## 2.2 Guidelines for ICD-10 coding of some work-related health problems

As a general rule, the relevant codes of each medical diagnosis should be used. The main condition should be coded as the primary diagnosis. ICD-10 defines the main condition as the condition, diagnosed at the end of the episode of health care, primarily responsible for the patient’s need for treatment or investigation. In addition to the main condition, one should, whenever possible, also list separately other conditions dealt with during the episode of health care. A detailed list of relevant ICD-10 codes is presented in annex A. It is not possible to list the diagnostic criteria of each of these conditions in this report, but guidelines on how to apply the above general rule are presented for some complex occupational disease categories in this chapter.

This document mainly deals with notification of occupational diseases, but a process of diagnosing an occupational disease and the general surveillance of working populations necessitate coding of health conditions that finally did not fulfil the diagnostic criteria of any disease as well as the coding of reasons to contact health personnel. According to ICD-10, if no definite diagnosis has been established by the end of the episode of health care, then the information that permits the greatest degree of specificity and knowledge about the condition should be recorded. This should be done by stating a symptom, abnormal finding or problem rather than qualifying a diagnosis as “possible”, “questionable” or “suspected” when it has been considered but not established. Therefore the following examples also illustrate the coding of such conditions, which one should be able to separate from occupational diseases. However, it is not possible to guide the coding of the variety of conditions that are relevant as non-occupational differential diagnoses for occupational diseases. The general guidelines of ICD-10 coding in morbidity applications are presented in Volume 2 of ICD-10 (pages 96-123).

### 2.2.1 Diseases caused by mechanical vibration affecting the hands and arms

It is considered that mechanical vibration may induce vascular and neurological diseases of the hand and wrist and osteoarticular diseases of the carpal region. The main diseases and the respective ICD-10 codes are as follows:

#### Vascular effects

I73.0 Raynaud’s syndrome

#### Neuropathies

G56.0 Carpal tunnel syndrome

G56.1 Other lesions of median nerve

G56.2 Lesion of ulnar nerve

G56.3 Lesion of radial nerve

G56.9 Mononeuropathy of upper limb, unspecified

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Arthrosis of the carpal region

M19.2 Secondary arthrosis of other joints

Note: “Other” refers to all other joints except first CMC joint (M18.-)

The same individual may obviously have several of the above diseases. In this case the most severe one should be coded as the primary diagnosis, and the other ones as secondary etc. diagnosis. If several of the above diseases are observed, but none of them can be concluded to be the leading one, the code T75.2 (Effects of vibration) should be used as the primary diagnosis, and the observed diseases should be coded as secondary etc. diagnosis. The code T75.2 should be used alone (or in combination with W43 (Exposure to vibration)) only in cases, where the outcome of vibration cannot be specified with the above or other ICD-10 codes.

## **2.2.2. Central nervous system effects of solvents and other neurotoxic agents**

### **Chronic effects**

The clinically observed continuum of chronic neurotoxic CNS effects extends from patients with chronic toxic encephalopathy to workers with documented “chronic” exposure but without disease and symptoms. A breakdown of such a continuum into separate categories is of course artificial. To classify somehow the different levels of CNS involvement it is proposed to use the following hierarchy:

- |   |                        |
|---|------------------------|
| 1. Chronic toxic encephalopathy (CTE)                           | G92                    |
| 2. Mild cognitive disorder, but no CTE                          | F06.7                  |
| 3. Patients with CNS symptoms but without disease               | R-codes (Section A.14) |
| 4. Patients with documented exposure but no disease or symptoms | Z03.3                  |

### **Acute intoxication**

The appropriate code in between T51.- and T65.- should be used for acute intoxication (see section A.15), but not for the conditions which can be more specifically coded according to the above principles.

Note: Some (neuro)toxic agents may also cause polyneuropathy and other neurological disorders (G-codes, section A.5), non-malignant diseases of the blood (D-codes, section A.3) and abdominal, general and other kinds of symptoms (R-codes, section A.14). In addition, for some agents (e.g. lead compounds) one may observe markers of elevated exposure in biological samples (see R70-R79 for examples), while no symptoms or diseases are observed. All these conditions are relevant in surveillance of working populations. If possible, such conditions should be coded with the appropriate specific ICD-10 codes, and not with the T-codes.

## **2.2.3 Respiratory diseases**

### **Allergic respiratory effects**

The following codes should be used for work-related allergic respiratory diseases:

J30.3 Other allergic rhinitis (Note: “Other” refers to non-pollen and non-seasonal cases)

J45.- Asthma

J45.0 Predominantly allergic asthma

J45.1 Nonallergic asthma  
J45.8 Mixed asthma  
J45.9 Asthma, unspecified

J67.- Hypersensitivity pneumonitis (Allergic alveolitis)  
J67.0 Farmer's lung  
J67.7 Airconditioner and humidifier lung  
See section A.9.2 for other subclasses of J67.-

Humidifier fever (J67.7), Organic dust toxic syndrome (J66.8) and Reactive airways dysfunction syndrome (J68.3, see irritant respiratory effects below) should be coded separately. It is a matter of choice whether a difference is made between allergic, nonallergic and mixed cases of asthma (see above), while it is important not to code asthma-like symptoms into asthma (E.g. Dyspnoea R06.0, obstructive breathing R06.2 or cough R05). Vasomotor rhinitis should not be mixed with allergic rhinitis, but be coded as J30.0. For cases with diffuse upper respiratory tract hypersensitivity reactions, the code J39.3 should be used.

### **Irritant respiratory effects**

#### *Acute effects*

For the acute irritant respiratory effects caused by chemicals, gases, fumes and vapours, the following codes could be used:

J04.0 Acute laryngitis  
J68.0 Acute bronchitis due to chemicals etc.  
J68.1 Acute pulmonary oedema due to chemicals etc.

J68.3 should be used for RADS (Reactive airways dysfunction syndrome) due to chemicals, gases, fumes and vapours.

#### *Chronic effects*

For the chronic irritant effects of the upper respiratory tract caused by chemicals, gases, fumes and vapours, the following codes could be used:

J31.0 Chronic rhinitis  
J37.0 Chronic laryngitis

The code J68.4 refers to chronic respiratory conditions due to chemicals, gases, fumes and vapours. According to ICD-10 it contains emphysema, obliterative bronchiolitis and pulmonary fibrosis. To be able to separate these different conditions, one could use J68.4 as the primary diagnosis and specify with the secondary diagnosis whether it was emphysema (J43.9), bronchitis (J42) or pulmonary fibrosis (J84.1). Note that according to ICD-10, conditions in J68.4 are excluded from J43.- and J84.1. To reach the above mentioned specificity and to fulfil as far as possible, the principles of ICD-10, it is recommend to use this practice of multiple coding.

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## Asbestos-related diseases

### *Asbestosis*

Asbestosis is coded as J61. Asbestosis refers to diffuse interstitial pulmonary fibrosis and the code J61 should be used only if evidence of such pulmonary fibrosis is available from chest x-ray, computed tomography or histological samples. This code should not be used if only pleural findings are observed or if only markers of exposure are present in bronchoalveolar lavage (BAL) or lung tissue but no pulmonary fibrosis has been observed. In patients with a malignant asbestos-related disease, the malignant disease should be coded as the primary diagnosis, while J61 could be used as a secondary diagnosis, if asbestos-related pulmonary fibrosis is present.

### *Pleural abnormalities*

Pleural plaques related to asbestos-exposure should be coded as J92.0 and benign exudative pleurisy related to asbestos-exposure as J90. For asbestos-related diffuse visceral pleural fibrosis, the code J94.8 should be used. Rounded atelectasis is also by origin a visceral pleural lesion, and J94.8 should be used also for this abnormality. If several asbestos-related abnormalities are present, it is recommended to code primarily the most severe one, while the milder abnormalities may be coded as secondary diagnoses if necessary. E.g. if asbestosis and pleural plaques are observed, J61 should be used as primary diagnosis and J92.0 as secondary diagnosis.

### *Malignant asbestos-related diseases*

At three-digit level, the code for mesothelioma is C45 and the code for lung cancer C34. The more detailed levels express the anatomical location of the malignancy. In some instances it is interesting to know the anatomical location of mesothelioma (pleural/peritoneal) or lung cancer (lobe), and if possible the full length of ICD-10 codes should be used. There is also evidence of an asbestos-related risk of some other malignant diseases some of which are mentioned in the code list of annex A (section A.2).

### *Asbestos-exposure but no evidence of a disease*

Sometimes there is a need to code the reason of contacting health personnel, but no diseases or symptoms are observed. Workers exposed to asbestos in the past are often followed by periodic medical examinations. If no evidence of an asbestos-related disease is observed in such an examination, the code Z10.0 should be used as the primary diagnosis. In some instances workers may contact health personnel because of a recent episode of accidental or other asbestos exposure, in such instances the code Z57.2 should be used as the primary diagnosis, if no evidence of an asbestos-related disease is observed. In both Z10.0 and Z57.2, a diagnosis code should be used as the primary code if an asbestos-related disease is observed, while the appropriate Z-code may be used as the secondary code.

## 2.2.4 Diffuse and unspecified work-related conditions

New suspected work-related health problems occur. Such conditions usually represent a varying mixture of symptoms and diseases (e.g. sick-building syndrome, multiple chemical sensitivity, electricity allergy). It takes time before there is enough knowledge and experience to set up well-defined diagnostic criteria and to conclude on their etiology. It is, nevertheless very important for surveillance and other purposes to be able to identify and somehow classify such new problems. According to the general principles of ICD-10, one should try to code as primary diagnosis, the most severe of the diseases or symptoms observed and as secondary diagnosis all other diseases or symptoms observed.

### 3. REFERENCES

1. ILO. Recording and notification of occupational accidents and diseases. An ILO code of practice. International Labour Office, Geneva, 1996.
2. Commission Recommendation of 22 May 1990 to the Member States concerning the adoption of a European schedule of occupational diseases. European Commission (90/326/EEC).
3. Karjalainen A, Virtanen S. European Statistics on Occupational Diseases - Evaluation of the 1995 pilot data. Eurostat Working Papers 3/1999/E/n°2, Eurostat, Luxembourg, 1999.
4. Sixteenth International Conference of Labour Statisticians. Resolution concerning statistics of occupational injuries resulting from occupational accidents. International Labour Office, Geneva, 1998.
5. Stellman JM (ed.). Encyclopaedia of Occupational Health and Safety, 4th Edition. Volumes 1-4. International Labour Office, Geneva, 1998.
6. Rom WN (ed.). Environmental & Occupational Medicine, 3rd Edition. Lippincott-Raven, Philadelphia, 1998.
7. Pearce N, Matos E, Vainio H, Boffetta P, Kogevinas M. Occupational Cancer in Developing Countries. IARC Scientific Publications 129. International Agency for Research on Cancer, Lyon, 1994.
8. European Commission. Information notices on diagnosis of occupational diseases. Report Eur 14768 EN. European Communities, Luxembourg, 1997.
9. WHO. ICD-10. International Statistical Classification of Diseases and Related Health Problems, Tenth Revision. Volumes 1-3. World Health Organization, Geneva, 1992-94.

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## Annex A.

### ICD-10 CODES OF SELECTED OCCUPATIONAL DISEASES

The following chapters contain tables of ICD-10 codes and diagnoses of occupational diseases. The tables also list typical causative agents for each disease and examples of typical occupations and industries where exposure to these agents may occur. The lists of causative agents and risk occupations/industries are meant to be only illustrative examples and should not be taken as exhaustive. It is to be underlined that whenever the causative agent is present or may occur at work, there is potential risk. It should be kept in mind that exposure to the causative agent may occur not only during "typical" use of the product but may result also from accidental chemical reactions, from combustion, from impurities or even arise from neighbouring workplaces. In addition new agents and new risk industries emerge, and for complete updated lists of causative agents and risk industries the interested reader should also refer to recent textbooks and related publications (e.g. 5,6,7,8, see chapter 3).

#### A.1 Certain infectious and parasitic diseases (A00-B99)

Almost any infection could occur as a result of occupational exposure but certain occupations carry a higher risk than others. These include agricultural workers, health care workers and laboratory personnel, workers involved with animals and animal products and outdoor workers in general where there may be exposure to excreta of infected animals. The list below is not exhaustive, but summarises the infections that most commonly are cited as occupational infections in textbooks and related publications (5,6,8). In infectious diseases the causative agents are the infectious micro-organisms. The micro-organism, the typical route of transmission and examples of the occupations at risk are listed below. The selected infectious diseases are divided into the following categories: intestinal and bacterial infections (A00-A69), chlamydial and rickettsial infections (A70-A79), viral infections (A80-B34), mycoses (B35-B49), protozoal and parasitic diseases (B50-B89). Some respiratory infections are coded into the chapter of respiratory diseases in ICD-10. Examples of such infections can be found in the list below. One should also notice, that tuberculosis superimposed of pneumoconioses is coded into J65 (see section A.9.1).

##### A.1.1 Intestinal and bacterial infections (A00-A69)

CODE	DISEASE	AGENT	OCCUPATION/INDUSTRY
A15.-to A19.-	Tuberculosis  A15-16 Respiratory A17 Nervous A18 Other organs A19 Miliary tuberculosis	<i>Mycobacterium tuberculosis</i> from infected humans  <i>Mycobacterium bovis</i> from Infected animals	Health care work, medical laboratory work  Abattoir work, veterinary work
A21.-	Tularaemia	<i>Francisella tularensis</i> from a variety of animals, particularly hares, rabbits, squirrels, rats, mice and other rodents	Farming and animal husbandry work, forestry, hunting, veterinary work, laboratory work and other work with small furry animals

CODE	DISEASE	AGENT	OCCUPATION/INDUSTRY
A22.-	Anthrax	<i>Bacillus anthracis</i> from animal products	Farming and animal husbandry work, abattoir work, veterinary work, laboratory work, work with wool, hair and hides
A23.-	Brucellosis	<i>Brucella</i> species from livestock	Farming and animal husbandry work, veterinary work, abattoir work, laboratory work
A26.-	Erysipeloid A26.0 Cutaneous erysipeloid	<i>Erysipelothrix rhusiopathiae</i> from infected animals	Farming and animal husbandry work, veterinary work, abattoir work, meat processing work and other work involving contact with pig, cattle, poultry or fish
A27.-	Leptospirosis	<i>Leptospira interrogans</i> from animals (especially rats), animal urine or contaminated soil	Farming and animal husbandry work, veterinary work, abattoir work, dairy work, meat processing work, work with contact with contaminated soil (e.g. sugar cane and field workers), freshwater fishermen and fish handlers, sewage work, garbage collectors
A35	Tetanus	<i>Clostridium tetani</i> from soil, sewage or animals through an uncleaned deep wound	Farming and military work, construction work, sewage work, work with contact with contaminated soil
A69.2	Lyme disease	<i>Borrelia burgdorferi</i> from bite of an infected tick	Outdoor work, e.g. farming and forestry

### A.1.2 Chlamydial and rickettsial infections (A70-A79)

CODE	DISEASE	AGENT	OCCUPATION/INDUSTRY
A70	<i>Chlamydia psittaci</i> infection (ornithosis)	<i>Chlamydia psittaci</i> from birds	Work involving contact with birds, poultry or their excreta
J16.0	Chlamydial pneumonia (Note also other pneumonias in J10-J18)	<i>Chlamydia pneumoniae</i> from humans	Health care work
A77.-	Spotted fever (tick-borne rickettsioses)	<i>Rickettsia rickettsii</i> and other <i>Rickettsia</i> species	Laboratory work, outdoor work
A78	Q fever	<i>Coxiella burnetii</i> from domestic animals (cattle, sheep, goats) or more rarely through tick bites	Sheep and cattle farming, laboratory work, textile work, abattoir work, veterinary work

### A.1.3 Viral infections (A80-B34)

CODE	DISEASE	AGENT	OCCUPATION/INDUSTRY
A82.-	Rabies	Virus usually from bites of infected wild or domestic animals	Farming and animal husbandry work, veterinary work, animal laboratory work, animal control personnel, wildlife workers
A84.-	Tick-borne viral encephalitis	Viruses from ticks	Outdoor work, e.g. hunters, farmers, gardeners, geologists
A98.-	Other viral haemorrhagic fevers, not elsewhere classified A98.5 Haemorrhagic fever with renal syndrome - Haemorrhagic fever - Hanta virus disease - Nephropathia epidemica	Viruses from rodents	Agricultural workers, herders, rodent control workers
B01.-	Varicella	<i>Varicella zoster</i> virus from humans	Health care and laboratory work
B05.-	Measles	Virus from humans	Health care and laboratory work
B16.-	Acute hepatitis B	Hepatitis B virus from infected blood	Health care and laboratory work, prison staff, police and ambulance personnel
B17.-	Other acute viral hepatitis B17.0 Acute hepatitis C	Hepatitis C virus from infected blood	Health care and laboratory work, prison staff, police and ambulance personnel
	B17.1 Acute hepatitis E	Hepatitis E virus from infected blood	Health care and laboratory work, prison staff, police and ambulance personnel
B20.-to B24.-	Human immunodeficiency virus (HIV) diseases  B24.- Unspecified HIV disease	HI virus from infected blood	Health care and laboratory work

**A.1.4 Mycoses (B35-B49)**

CODE	DISEASE	AGENT	OCCUPATION/INDUSTRY
B38.-	Coccidioidomycosis	<i>Coccidioides immitis</i> from soil (endemic to western North America)	Agricultural work, laboratory work, military work
B39.-	Histoplasmosis	<i>Histoplasma capsulatum</i> from soil; bird or bat excrement (endemic to eastern North America)	Agricultural work, work with poultry, laboratory work
B42.-	Sporotrichosis	<i>Sporothrix schenckii</i> from plant debris, tree and garden plant bark	Agricultural work, gardeners, florists

**A.1.5 Protozoal and parasitic diseases (B50-B89)**

CODE	DISEASE	AGENT	OCCUPATION/INDUSTRY
B58.-	Toxoplasmosis	<i>Toxoplasma gondii</i> from cat (or birds, sheep, goats, swine, cattle etc.)	Agricultural work, veterinary work, abattoir work, pet shop work
B65.-	Schistosomiasis	<i>Schistosoma</i> species from contact with contaminated water	Agricultural work, any waterworks (e.g. construction of dams, work with irrigation ponds and canals)
B67.-	Ecchinococcosis	<i>Ecchinococcus</i> species from dogs and domestic livestock	Shepherds
B76.-	Hookworm diseases B76.0 Ancylostomiasis	<i>Ancylostoma</i> species	Miners and tunnel workers, agricultural work

## A.2 Malignant neoplasms (C00-C97)

The criteria for identifying the occupational nature of an individual case of cancer are often more difficult to define than for many non-malignant occupational diseases. Occupational and non-occupational carcinogens often interact and there are no histopathological features to distinguish an occupational case of cancer from a non-occupational one. The following list includes examples of some typical occupational cancers (disease-exposure pairs). Mainly cancers caused by IARC group 1 agents (definite human carcinogen) have been included. For example for lung cancer the complete list of known or suspected occupational carcinogens is much more extensive. More detailed lists of causative agents, risk industries and risk occupations can be found in textbooks (5,6,7), but the spectrum of malignant diseases (and ICD-10 codes) is principally the same as below.

CODE	DISEASE	AGENT	OCCUPATION/INDUSTRY
C22.-	Malignant neoplasm of liver and intrahepatic bile ducts C22.3 Angiosarcoma of liver	Vinyl chloride monomer	Manufacturing of vinyl chloride, vinyl chloride polymerisation industry
C30.-	Malignant neoplasm of nasal cavity and middle ear C30.0 Nasal cavity	Hardwood dust  Chromium(VI) compounds  Nickel compounds	Woodwork, cabinet and furniture makers  Chromium producers, metal plating, dye/pigment manufacturing  Nickel smelting and refining, stainless steel production, manufacture of batteries
C32.-	Malignant neoplasm of larynx	Asbestos	Asbestos industries and utilizers (see C45)
C34.-	Malignant neoplasm of bronchus and lung	Asbestos  Arsenic and its compounds  Chromium VI compounds  Nickel compounds  Radon progeny  Silica  Soots  Bis-(chloro-methyl) ether  Beryllium  Cadmium	Asbestos industries and utilizers (see C45)  Arsenic mining, copper smelting, production and use of arsenic pesticides, herbicides and insecticides, tanning, glassmaking Chromium producers, metal plating, dye/pigment manufacturing  Nickel smelting and refining, stainless steel production, manufacture of batteries  Underground mining, processing of ores and radioactive products Mining, quarrying, foundries, sand-blasting, construction work, work involving grinding, drilling or breaking of silica-containing rocks, ceramics and glass manufacture Pigment manufacture, chimney sweeping, road paving, insulation Chemical industry  Beryllium extraction and metallurgy, aerospace industry, nuclear industry Dye and pigment manufacture, manufacture of nickel-cadmium batteries

CODE	DISEASE	AGENT	OCCUPATION/INDUSTRY
C40.-to C41.-	Malignant neoplasm of bone and articular cartilage C40 = ...of limbs C41 = ... of other sites	Ionizing radiation	Occupations with exposure to ionizing radiation from x-ray machines, nuclear reactors etc., work involving isotopes
C44	Other malignant neoplasms of skin  -squamous cell carcinoma Note: "Other" refers to non-melanoma	Arsenic  By-products of distillation of coal: soot, tar, pitch, mineral oils  Ionizing radiation	Arsenic mining, copper smelting, production and use of arsenic pesticides, herbicides and insecticides, tanning, glassmaking  Pigment manufacture, chimney sweeping, road paving, insulation  Occupations with exposure to ionizing radiation from x-ray machines, nuclear reactors etc., work involving isotopes
C45.-	Mesothelioma C45.0 Mesothelioma of pleura C45.1 Mesothelioma of peritoneum C45.7 Mesothelioma of other sites C45.9 Mesothelioma, unspecified	Asbestos	Asbestos industries and utilizers (e.g. asbestos mines and quarries, asbestos products industry, insulation work, construction work, shipyard work, garage work, work involving removal of asbestos containing materials)
C67.-	Malignant neoplasm of bladder	Aromatic amines	Rubber and dye workers
C91.- to C95.-	Leukaemias C91 Lymphoid leukaemia C92 Myeloid leukaemia C94 Other leukaemias of specified cell type	Ionizing radiation  Benzene	Occupations with exposure to ionizing radiation from x-ray machines, nuclear reactors etc., work involving isotopes  Occupations with exposure to benzene, e.g. coke ovens, use of benzene containing solvents

### A.3 Non-malignant diseases of the blood (D50-D89)

Non-malignant diseases and abnormalities of red and white blood cells or thrombocytes may be due to various occupational exposures. These disorders may occur alone or be part of a complex toxic process including diseases and symptoms of various organs. If clear haematological abnormalities are observed it is preferable to code them specifically instead of using the non-specific codes of toxic effects (T-codes, section A.15). Note also, that leukaemia is included in malignant diseases (section A.2).

CODE	DISEASE	AGENT	OCCUPATION/INDUSTRY
D59.-	Acquired haemolytic anemias D59.4 Other non-autoimmune haemolytic anemias	Arsenic hydride (arsine)  Naphthalene  Tributyl tin  Trinitrotoluene	Electrolytic processes, arsenic minerals processing  Chemical industry  Manufacture and use of biocides  Explosives industries
D61.-	Other aplastic anemias D61.2 Aplastic anaemia due to other external agents	Benzene   Ionizing radiation	Occupations with exposure to benzene e.g. use of benzene containing solvents, petroleum industry, coke ovens Occupations with exposure to ionizing radiation from x-ray machines, nuclear reactors etc., work involving isotopes
D64.-	Other anemias D64.2 Secondary sideroplastic anaemia due to drugs and toxins	Lead	Lead and zinc mining and metallurgy, construction industry, plumbing, accumulator plants, ammunition manufacture, manufacture of ceramics or crystal, manufacture of lead storage batteries, welding and cutting
D70	Agranulocytosis	Benzene   Ionizing radiation	Occupations with exposure to benzene e.g. use of benzene containing solvents, petroleum industry, coke ovens  Occupations with exposure to ionizing radiation from x-ray machines, nuclear reactors etc., work involving isotopes
D74.-	Methaemoglobinaemias D74.8 Other methaemo-globinaemias	Aromatic amino- and nitrocompounds	Explosives and dye industries

#### A.4 Mental and behavioural disorders (F00-F99)

Work-related mental and behavioural disorders and symptoms are a growing health problem. It is, however, difficult to assess at individual level the occupational nature of such disorders, and there is not enough experience to guide the notification (or recognition) of most of such disorders.

CODE	DISEASE	EXPOSURE
F06.-	Other mental disorders due to brain damage and dysfunction and to physical disease  F06.7 Mild cognitive disorder	See section 2.2.2 for coding principles of the toxic central nervous disorders.  Lead Organic solvents
F07.-	Personality and behavioural disorders due to brain disease, damage and dysfunction  F07.2 Postconcussional syndrome	Head trauma
F43.-	Reaction to severe stress, and adjustment disorders  F43.0 Acute stress reaction F43.1 Post-traumatic stress disorder	Exceptional physical and mental stress  Stressful event or situation

## A.5 Diseases of the nervous system (G00-G99)

The most common occupational nervous diseases are mononeuropathies, polyneuropathies and toxic encephalopathy. These disorders may occur alone or sometimes as a part of a complex toxic process including diseases and symptoms of various organs. If clear nervous diseases are observed, it is preferable to code them specifically instead of using the non-specific codes of toxic effects (T-codes, section A.15). Notice that the coding principles of the toxic disorders of the central nervous system are described in section 2.2.2 and the coding principles of vibration effects in section 2.2.1.

CODE	DISEASE	AGENT	OCCUPATION/INDUSTRY
G21.-	Secondary parkinsonism G21.2 Secondary parkinsonism due to other external causes	Manganese	Manganese mining and processing, metallurgy, manufacture of batteries, welding
G25.-	Other extrapyramidal and movement disorders	Mercury and its compounds	Electrolytic chlorine production, battery production, fungicide manufacture, mercury metallurgy, manufacture of mercury containing equipment (e.g. thermometers)
G56.-	Mononeuropathies of the upper limb G56.0 Carpal tunnel syndrome G56.2 Lesion of the ulnar nerve G56.3 Lesion of the radial nerve G56.8 Other mononeuropathies of the upper limb	For G56.0: Forceful repetitive work, vibration and extreme postures of the wrist. Especially a combination of these risk factors	For G56.0: Work involving forceful repetitive movements, work with vibrating tools, work involving extreme postures of the wrist. E.g. meat, poultry and fish processors, sawmill and creamery workers, construction workers
G62.-	Polyneuropathy due to other toxic agents G62.2 Polyneuropathy due to other toxic agents         G62.8 Other specified polyneuropathies	Arsenic and its compounds  Acrylamide Carbon disulphide  Ethylene oxide  N-Hexane and Methyl n-butyl ketone Lead  Mercury  Organophosphorous compounds Radiation  Vibration (e.g. hand)	Arsenic mining, copper smelting, production and use of arsenic pesticides, herbicides and insecticides, tanning, glassmaking Plastics industry Rayon manufacturing, rubber and laboratory work Ethylene oxide sterilizer operators Use of n-hexane or methyl n-butyl ketone solvents see G92 next page  see G25 above  Pesticide industry and use  Use of vibrating tools

CODE	DISEASE	AGENT	OCCUPATION/INDUSTRY
G92	Toxic encephalopathy	<p>Lead</p> <p>Mercury</p> <p>Solvents e.g.: toluene xylene styrene pentane white spirit 1,1,2, trichlorethane</p>	<p>Lead and zinc mining and metallurgy, construction industry, plumbing, accumulator plants, ammunition manufacture, manufacture of ceramics or crystal, manufacture of lead storage batteries, welding and cutting</p> <p>Electrolytic chlorine production, battery production, fungicide manufacture, mercury metallurgical industry</p> <p>Occupations with exposure to solvents</p>

## A.6 Diseases of the eye and adnexa (H00-H59)

Some chemical agents may cause chemical corruptions, most typically as a result of an accidental incident. In most notification schemes, such instances at work are classified as accidents at work and not as occupational diseases. For the use of ICD-10 in notification of accidents at work see section 1.3 and reference 4.

CODE	DISEASE	AGENT	OCCUPATION/INDUSTRY
H10.-	Conjunctivitis H10.8 Other conjunctivitis	Many of the allergens mentioned in occupational asthma (J45) and occupational rhinitis (J30.3) can also cause occupational conjunctivitis (see section A.9.2)	See J45
H16.-	Keratitis H16.1 Other superficial keratitis without conjunctivitis (photokeratitis)	UV radiation	Occupations with exposure to UV radiation, e.g. welding, outdoor work.
H26.-	Other cataract H26.8 Other specified cataract	Microwaves  Ionizing radiation  Infrared radiation  Trinitrotoluene  Naphthalene  Dinitrophenol, dinitro-cresol  Ethylene oxide	Microwave and radar technicians Occupations with exposure to ionizing radiation from x-ray machines, nuclear reactors etc., work involving isotopes Blacksmiths, glass blowers, exposure to industrial lasers Explosives industries  Chemical industry  Explosives, dye, herbicide and pesticide industries Ethylene oxide sterilizer operators
H55	Nystagmus and other irregular eye movements	Poor lightning	Miners

## A.7 Diseases of the ear and mastoid process (H60-H95)

Noise-induced hearing loss:

CODE	DISEASE	EXPOSURE	OCCUPATION/INDUSTRY
H83.3	Noise effects on inner ear	Excessive noise	A variety of industries and occupations

## A.8 Diseases of the circulatory system (I00-I99)

Various occupational factors are suspected to contribute in hypertension and coronary artery disease (5). These include occupational stress, shift work, heat and cold, radiation and certain chemicals. It is, however, difficult to assess at individual level the occupational nature of such diseases, and there is not enough experience to guide the notification (or recognition) of these.

Hand-arm vibration syndrome may include a vascular component, i.e. Raynaud's phenomenon, which is coded with I73.0. The neurological components should be coded with the codes of neurological disorders (see section 2.2.2).

CODE	DISEASE	EXPOSURE	OCCUPATION/INDUSTRY
I73.0	Raynaud's syndrome	Vibration	Lumberjacks, chain sawyers, grinders, chippers, rock drillers, stone cutters, jackhammer operators, riveters

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## A.9 Diseases of the respiratory system (J00-J99)

Respiratory diseases account for an important number of occupational diseases. The main categories of respiratory occupational diseases dealt in this chapter are pneumoconioses caused by exposure to inorganic dusts, occupational asthma and allergic respiratory diseases and toxic and irritative respiratory diseases. The coding of respiratory cancers is discussed in the section of malignant diseases (section A.2) and tuberculosis and some other respiratory infections in the section of infectious diseases (section A.1).

### A.9.1 Pneumoconioses and pulmonary or pleural fibrosis caused by inorganic dusts

ICD-10 offers separate codes for the most common pneumoconioses (J60-J63) and a code for unspecified pneumoconiosis (J64). According to ICD-10 all cases of pneumoconiosis when associated with tuberculosis should be coded in J65. Asbestos-related pleural plaques are coded in J92.0, asbestos-related diffuse pleural fibrosis with J94.8 and asbestos-related exudative pleurisy in J90, while asbestosis itself (i.e. asbestos-related pulmonary fibrosis) is coded in J61 (see section 2.2.3).

CODE	DISEASE	AGENT	OCCUPATION/INDUSTRY
J60	Coalworker's pneumoconiosis	Coal dust	Coal miners
J61	Pneumoconiosis due to asbestos and other mineral fibres (Asbestosis)  See also J90, J92.0, J94.8	Asbestos	Asbestos industries and utilizers (e.g. asbestos mines and quarries, asbestos products industry, insulation work, construction work, shipyard work, garage work, work involving removal of asbestos containing materials)
J62.-	Pneumoconiosis due to dust containing silica (Silicosis) J62.0 Pneumoconiosis due to talc dust  J62.8 Pneumoconiosis due to other dust containing silica	Talc  Silica	Talc processors, soapstone mining-milling, polishing, cosmetics industry Mining, quarrying, foundries, sand-blasting, construction work, work involving grinding, drilling or breaking of silica-containing rocks, ceramics and glass manufacture

CODE	DISEASE	AGENT	OCCUPATION/INDUSTRY
J63.-	Pneumoconiosis due to other inorganic dust J63.0 Aluminosis (of lung)  J63.1 Bauxite fibrosis (of lung)  J63.2 Berylliosis  J63.3 Graphite fibrosis (of lung)  J63.4 Siderosis  J63.5 Stannosis  J63.8 Pneumoconiosis due to other specified inorganic dust	Aluminium  Bauxite  Beryllium  Graphite dust  Iron dust  Tin dust and fumes  E.g. mixed dust pneumoconiosis	Manufacture and utilisation of aluminium Bauxite extraction and processing  Beryllium extraction and metallurgy, aerospace industry, nuclear industry Production of graphite articles, production of artificial graphite from coal or mineral oil Iron mining and metallurgy  Tin mining and metallurgy  Foundries
J65	Pneumoconiosis associated with tuberculosis	Any of the condition in J60-J64 when complicated with tuberculosis should be coded as J65 according to ICD-10.	See risk occupations/industries of J60-J63 above
J90	Pleural effusion, not elsewhere classified (pleurisy with effusion)	Asbestos	Asbestos industries and utilizers (see J61, previous page)
J92.-	Pleural plaque J92.0 Pleural plaque with presence of asbestos	Asbestos	Asbestos industries and utilizers (see J61, previous page)
J84.-	Other interstitial pulmonary disease J84.1 Other interstitial pulmonary diseases with fibrosis	Hard metal (cobalt)  Note: In addition to pneumoconiosis, hard-metal disease may have other clinical manifestations: asthma (J45), rhinitis (J30.3)	Sintering, workers exposed to dust from sintered metals (e.g. grinding of hard metal tools)
J94.-	Other pleural conditions J94.8 Other specified pleural conditions	Asbestos-related diffuse pleural thickening	Asbestos industries and utilizers (see J61, previous page)

## A.9.2 Occupational asthma and allergic respiratory diseases

Occupational asthma may be coded as J45, or at 4-digit level more specifically according to the allergic or non-allergic nature of the disease (see section 2.2.3). Occupational allergic rhinitis should be coded as J30.3. ICD-10 offers also specific codes for byssinosis and related airways diseases (J66.-) and hypersensitivity pneumonitis/allergic alveolitis (J67.-). In the latter group, the 4-digit level codes refer to the exposure causing the disease. Organic dust toxic syndrome (ODTS) should be coded in J66.8. More than 250 causative agents have been identified for allergic respiratory diseases (5,6). Only the most important ones and the main categories are given as examples in the list below.

CODE	DISEASE	AGENT	OCCUPATION/INDUSTRY
J30.3	Other allergic rhinitis	Many of the agents causing occupational asthma, can also induce allergic rhinitis of occupational origin (see J45)	See J45
J45.-	Asthma J45.0 Predominantly allergic asthma J45.1 Non-allergic asthma J45.8 Mixed asthma J45.9 Asthma, unspecified	A huge variety of chemical and biological substances. Examples:  Isocyanates  Flour and grain dusts  Animal epithelia and excretions  Wood dusts  Plant dusts  Reactive dyes  Persulfates  Latex (natural rubber)	Chemical work, spray painting, polyurethane foam manufacture, use polyurethane-based adhesives Baking, farming  Laboratory work, farming  Wood work, carpenters  Occupations with exposure to dusts from plants Textile dyers  Hairdressers  Health care work
J66.-	Airway disease due to specific organic dust J66.0 Byssinosis  J66.1 Flax-dresser's disease  J66.8 Airway disease due to other specific organic dust	Cotton, flax, hemp, and cotton-synthetic dusts  Flax dust  Organic dusts, like grain dust, animal derived dusts, fungi or other microbial dusts	Cotton industry workers    Work with exposure to organic dusts (e.g. agricultural work)

CODE	DISEASE	AGENT	OCCUPATION/INDUSTRY
J67.-	Hypersensitivity pneumonitis due to organic dust	Hypersensitivity pneumonitis can be due to fungi from different sources or to other organic dust	Work involving exposure to fungi or fungal spores (see subdivision of J67 for some of the risk occupations)
	J67.0 Farmer's lung		
	J67.1 Bagassosis		
	J67.2 Bird fancier's lung		
	J67.3 Suberosis		
	J67.4 Maltworker's lung		
	J67.5 Mushroom-worker's lung		
	J67.6 Maple-bark-stripper's lung		
	J67.7 Air-conditioner and humidifier lung		
	J67.8 Hypersensitivity pneumonitis due to other organic dust		

### A.9.3 Toxic and irritative respiratory diseases

Toxic and irritative compounds cause harm through different mechanisms and the extent of the injury can vary widely. At least 50 respiratory irritants and toxic chemicals have been identified (5,6). The table below lists typical examples of such agents. Notice also, that in order to achieve the highest possible degree of specificity in the coding of the medical effect of the respiratory irritation, one should follow the guidelines presented in section 2.2.3.

CODE	DISEASE	AGENT	OCCUPATION/ INDUSTRY
J68.-	Respiratory conditions due to inhalation of chemicals, gases, fumes and vapours  J68.0 Bronchitis and pneumonitis due to chemicals, gases, fumes and vapours J68.1 Acute pulmonary oedema due to chemicals, gases, fumes and vapours J68.2 Upper respiratory inflammation due to chemicals, gases, fumes and vapours J68.3 Other acute or subacute respiratory conditions due to chemicals, gases, fumes and vapours (RADS) J68.4 Chronic respiratory conditions due to chemicals, gases, fumes and vapours (emphysema, bronchiolitis, fibrosis) J68.8 Other respiratory conditions due to chemicals, gases, fumes and vapours	Typical examples: Chlorine, Ammonia, Formaldehyde, Cadmium, Cobalt, Mercury, Ozone, Sulphur dioxide (sulphuric acid), Nitrogen oxide, Phosgene, Acetaldehyde, Nickel carbonyl, Paraquat	Various occupations for example in the chemical industry
J34.-	Other disorders of nose and nasal sinuses: J34.8 Other specified disorders of nose and nasal sinuses - nasal ulcer and perforation of the nasal septum	Chromium  Arsenic and its compounds	Chromium producers, metal plating, dye/pigment manufacturing Arsenic mining, copper smelting, production and use of arsenic pesticides, herbicides and insecticides tanning, glassmaking
J04.-	Acute laryngitis and tracheitis	See J68 above	See J68

**A.10 Diseases of liver (K00-K93)**

CODE	DISEASE	AGENT	OCCUPATION/INDUSTRY
K71.-	Toxic liver disease	Various chemicals may cause toxic liver damages. Examples: Carbon tetra chloride  Chloroform Yellow (white) phosphorus	Dry cleaning, occupations with exposure to carbon tetrachloride based solvents  Manufacture of explosives, rodenticides and fertilizers

## A.11 Diseases of the skin and subcutaneous tissue (L00-L99)

The most common occupational skin diseases are allergic contact dermatitis (L23) and irritative contact dermatitis (L24). These diseases can be caused by a huge variety of chemicals and other harmful agents (5,6). The following list mentions just the main groups of such agents. In ICD-10, the 4-digit categories allow to separate some of the main agent categories (see below). A thorough and detailed classification of causative agents/exposures would be very useful for classifying occupational skin diseases. Both the 4-digit codes in L23-L24 and the exposure codes W and X (section A.16) are too general for most purposes.

Examples of occupational skin cancers (in section A.2) and skin infections (in section A.1) are mentioned in other chapters. Some chemical agents may cause chemical corrosions, most typically as a result of an accidental incident. In most notification schemes, such instances at work are classified as accidents at work and not as occupational diseases. For the use of ICD-10 in notification of accidents at work see reference 4.

CODE	DISEASE	AGENT	OCCUPATION/ INDUSTRY
L23.-	Allergic contact dermatitis  L23.0 ... due to metals L23.1 ... due to adhesives L23.2 ... due to cosmetics L23.3 ... due to drugs in contact with skin L23.4 ... due to dyes L23.5 ... due to other chemical products L23.6 ... due to food in contact with skin L23.7 ... due to plants, except food L23.8 ... due to other agents L23.9 Allergic contact dermatitis, unspecified	Main causative agent groups: Antibiotics, Preservatives, Plants and trees, Antiseptics, Rubber products, Dyes, Glues and bonding agents, Metals	Various occupations in the manufacture and use of each of the causative agents
L24.-	Irritant contact dermatitis  L24.0 ... due to detergents L24.1 ... due to oils and greases L24.2 ... due to solvents L24.3 ... due to cosmetics L24.4 ... due to drugs in contact with skin L24.5 ... due to other chemical products L24.6 ... due to food in contact with skin L24.7 ... due to plants, except food L24.8 ... due to other agents L24.9 Irritant contact dermatitis, unspecified	Main causative agent groups: Soaps/Detergents, Solvents, Oils and lubricants, Petroleum products, Acids, Alkalies, Cement, Metal salts, Slag and glass wool	Various occupations in the manufacture and use of each of the causative agents

CODE	DISEASE	AGENT	OCCUPATION/ INDUSTRY
L25.-	Unspecified contact dermatitis L25.0 ... due to cosmetics L25.1 ... due to drugs in contact with skin L25.2 ... due to dyes L25.3 ... due to other chemical products L25.4 ... due to food in contact with skin L25.5 ... due to plants except food L25.8 ... due to other agents L25.9 Unspecified contact dermatitis, unspecified cause		As in L23 and L24
L50.-	Urticaria L50.6 Contact urticaria	Latex (natural rubber)  Food products (flours, fruits, vegetables, etc.)  Animal epithelia etc.	Health care work  Food and food product manufacture, Agriculture Agriculture Animal laboratory work
L58.-	Radiodermatitis L58.0 Acute radiodermatitis L58.1 Chronic radiodermatitis	Ionizing radiation	Occupations with exposure to ionizing radiation from x-ray machines, nuclear reactors etc., work involving isotopes
L70.-	Acne L70.8 Other acne	Chloracne: Halogenated aromatic hydrocarbons (e.g. Polychlorinated biphenyls, PCBs)  Other chemical-induced acne: Asphalt, Creosote, Oils, Greases, Pitch, Tar	Pesticide and herbicide industries, work with condensers and transformers  Oil refining, asphalt work

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## A.12 Diseases of the musculoskeletal system and connective tissue (M00-M99)

Many musculoskeletal diseases can be related to work. Due to the multifactorial origin of these diseases, the etiologic fraction due to work is often difficult to assess. There is not enough experience to guide the notification of work-related neck, shoulder or low back disorders. Vigorous and repetitive movements of the upper limb joints may cause diseases, which are included in the notification practice in many countries (see below and section A.5). The incidence of tenosynovitis of the hand and wrist is high in many manufacturing occupations. Upper extremity pain and other symptoms are prevalent also in other types of tasks which involve repetitive, but usually not highly strenuous movements, such as modern keyboard work, typing and supermarket cashiering (see ref. 5).

Osteorthrosis of the carpal and elbow region may be due to mechanical vibration and is included in the notification schemes in some countries (see codes M19.2, M93.1 and M93.8 in ICD-10).

CODE	DISEASE	AGENT	OCCUPATION/INDUSTRY
M65.-	Synovitis and tenosynovitis M65.4 Radial styloid tenosynovitis (de Quervain)	Repetitive movements, forceful exertions and extreme postures of the wrist. Especially a combination of these risk factors.	Work involving repetitive movements, forceful exertions and extreme postures of the wrist. E.g. meat, fish and poultry processing, construction and carpentry, electronics assembly, textile work
M70.-	Soft tissue disorders related to use, overuse and pressure M70.0 Chronic crepitant tenosynovitis of hand and wrist  M70.2 Olecranon bursitis  M70.4 Prepatellar bursitis	Repetitive movements, forceful exertions and extreme postures of the wrist. Especially a combination of these risk factors.  Prolonged pressure of the elbow region  Prolonged stay in kneeling position	Same as above    Carpet and floor layers
M77.-	Other enthesopathies M77.0 Medial epicondylitis M77.1 Lateral epicondylitis	Repetitive forceful work	Construction workers, such as wallboard installators, roofers and masons, meat cutters, packers, other work involving repetitive and forceful movements

**A.13 Diseases of the genitourinary system (N00-N99)**

Certain chemicals have toxic effects to kidneys (see below). In addition, there is increasing concern on work-related problems of female and male infertility as well as work-related problems of pregnancy. There is, however, not enough experience to guide the notification of such problems. Notice, that coding of occupational cancer of the genitourinary system is discussed in section A.2.

CODE	DISEASE	AGENT	OCCUPATION/ INDUSTRY
N14.-	Drug and heavy-metal-induced tubulointerstitial and tubular conditions N14.3 Nephropathy induced by heavy metals  N14.4 Toxic nephropathy, not elsewhere classified	Heavy metals: e.g. cadmium  Halogenated hydrocarbons: e.g. carbon tetrachloride, trichloroethylene	Dye and pigment manufacture, manufacture of nickel-cadmium batteries, electro plating, plastic industry Occupations with exposure to solvents containing halogenated hydrocarbons

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## A.14 Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified (R00-R99)

Chapter XVIII of ICD-10 contains symptoms, signs, abnormal results of clinical or other investigative procedures and ill-defined conditions. Symptoms and signs that point rather specifically to a given diagnosis, have been assigned to a category in other chapters of the classification. The conditions in this chapter consist of (a) cases for which no more specific diagnosis can be made even after all the facts bearing on the case have been investigated; (b) signs or symptoms existing at the time of initial encounter that proved to be transient and whose causes could not be determined; (c) provisional diagnoses in a patient who failed to return for further investigation or care; (d) cases referred elsewhere for investigation or treatment before the diagnosis was made; (e) cases in which a more precise diagnosis was not available for any other reason; (f) certain symptoms, for which supplementary information is provided, that represent important problems in medical care in their own right.

Obviously, one should not use these codes, when a more specific diagnosis can be made. Nevertheless these codes are useful in many situations encountered in surveillance of working populations and some of them may be relevant for notification purposes. As these codes refer to somewhat poorly defined conditions, it is usually not possible to name the causative agent of the condition, although a suspicion of the agent may exist. Therefore no causative agents, risk occupations or industries are listed in the table below. For the complete list of R-codes one should refer to ICD-10.

CODE	SYMPTOM OR SIGN
R04.-	Haemorrhage from respiratory passages R04.0 Epistaxis R04.2 Haemoptysis
R05	Cough
R06.-	Abnormalities of breathing R06.0 Dyspnoea R06.2 Wheezing
R09.-	Other symptoms and signs involving the circulatory and respiratory system R09.0 Asphyxia R09.1 Pleurisy
R10.-	Abdominal and pelvic pain R10.4 Other and unspecified abdominal pain
R11	Nausea and vomiting
R17	Unspecified jaundice
R20.-	Disturbances of skin sensation R20.2 Paresthesia of skin
R21	Rash or other nonspecific skin eruption
R23.-	Other skin changes R23.0 Cyanosis R23.3 Spontaneous ecchymosis R23.4 Changes in skin texture
R25.	Abnormal involuntary movements R25.1 Tremor, unspecified R25.3 Fasciculation

CODE	SYMPTOM OR SIGN
R27.-	Other lack of coordination R27.0 Ataxia, unspecified
R31	Unspecified haematuria
R34	Anuria and oliguria
R35	Polyuria
R40	Somnolence, stupor and coma
R42	Dizziness and giddiness
R43.-	Disturbances of smell and taste R43.0 Anosmia R43.1 Parosmia
R44.-	Other symptoms and signs involving general sensations and perceptions R44.3 Hallucinations, unspecified
R50.-	Fever of unknown origin R50.9 Fever, unspecified
R51	Headache
R53	Malaise and fatigue
R55	Syncope and collapse
R68.-	Other general symptoms and signs R68.8 Other specified general symptoms and signs
R70-R79	Abnormal findings of blood, without diagnosis See ICD-10 for details

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## A.15 Injury, poisoning and certain other consequences of external causes (S00-T98)

Chapter XIX contains codes for injury poisoning and certain other consequences of external causes. Most of these codes refer to conditions which are relevant only in notification of occupational injuries. Some of the codes, however, are relevant for occupational disease also. Notice, that the codes below should not be used as a primary diagnosis, when the condition can be coded with some specific diagnosis or symptom code. They should be used as primary codes only when the condition is so diffuse that no other code can be used (see examples on vibration effects and CNS effects in sections 2.2.1 and 2.2.2).

The codes in chapter XIX, especially in between T20-T78 include information on the exposure. These codes, however, are not exposure codes by nature. Instead they are codes to be used for poisonings and certain other consequences of external causes. Therefore they should be used only for coding of such conditions and not as exposure codes.

CODE	EFFECT
T51.-	Toxic effect of alcohol T51.0 Ethanol T51.1 Methanol T51.2 2-Propanol T51.3 Fusel oil (amyl-, butyl- and propyl-alcohol) T51.8 Other alcohols
T52.-	Toxic effect of organic solvents T52.0 Petroleum products T52.1 Benzene T52.2 Homologues of benzene T52.3 Glycols T52.4 Ketones T52.5 Other organic solvents
T53.-	Toxic effect of halogen derivatives of aliphatic and aromatic hydrocarbons T53.0 Carbon tetrachloride T53.1 Chloroform T53.2 Trichloroethylene T53.3 Tetrachloroethylene T53.4 Dichloromethane T53.5 Chlorofluorocarbons T53.6 Other halogen derivatives of aliphatic hydrocarbons T53.7 Other halogen derivatives of aromatic hydrocarbons
T54.-	Toxic effect of corrosive substances T54.0 Phenol and phenol homologues T54.1 Other corrosive organic compounds T54.2 Corrosive acids and acid-like substances T54.3 Corrosive alkalis and alkali-like substances
T55	Toxic effect of soaps and detergents
T56.-	Toxic effect of metals T56.0 Lead and its compounds T56.1 Mercury and its compounds T56.2 Chromium and its compounds T56.3 Cadmium and its compounds T56.4 Copper and its compounds

CODE	EFFECT
	T56.5 Zinc and its compounds T56.6 Tin and its compounds T56.7 Beryllium and its compounds T56.8 Other metals
T57.-	Toxic effect of other inorganic substances T57.0 Arsenic and its compounds T57.1 Phosphorus and its compounds T57.2 Manganese and its compounds T57.3 Hydrogen cyanide T57.8 Other specified inorganic substances
T58	Toxic effect of carbon monoxide
T59.-	Toxic effect of other gases, fumes and vapours T59.0 Nitrogen oxides T59.1 Sulfur dioxide T59.2 Formaldehyde T59.3 Lacrimogenic gas T59.4 Chlorine gas T59.5 Fluorine gas and hydrogen fluoride T59.6 Hydrogen sulphide T59.7 Carbon dioxide T59.8 Other specified gases, fumes and vapours
T60.-	Toxic effect of pesticides T60.0 Organophosphate and carbamate insecticides T60.1 Halogenated insecticides T60.2 Other insecticides T60.3 Herbicides and fungicides T60.4 Rodenticides T60.8 Other pesticides
T65.-	Toxic effect of other and unspecified substances T65.0 Cyanides T65.1 Strychnine and its salts T65.2 Tobacco and nicotine T65.3 Nitroderivatives and aminoderivatives of benzene and its homologues T65.4 Carbon disulphide T65.5 Nitroglycerin and other nitric acids and esters T65.6 Paints and dyes, not elsewhere classified T65.7 Toxic effect of other specific substances
T66	Unspecified effects of radiation
T67.-	Effects of heat and light
T68	Hypothermia
T69	Other effects of reduced temperature
T70	Effects of air pressure and water pressure
T71	Asphyxiation
T73.-	Effects of other deprivation T73.2 Exhaustion due to exposure T73.3 Exhaustion due to excessive exertion
T75.-	Effects of other external causes T75.2 Effects of vibration T75.4 Effects of electric current
T78.-	Adverse effects, not elsewhere classified T78.2 Anaphylactic shock, unspecified T78.4 Allergy, unspecified

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## A.16 External causes of morbidity and mortality (V01-Y98)

Chapter XX of ICD-10 (V01-Y98) permits the classification of environmental events and circumstances as the cause of injury, poisoning and other adverse effects. Where a code from this section is applicable, it is intended that it shall be used in addition to a code from another chapter of the Classification indicating the nature of the condition (disease, symptom etc.).

This chapter contains some codes that can be used to indicate the causative agent/exposure or risk factor of the occupational condition. They are listed below. In general, the coding of exposures/causative agents is discussed in section 1.3. As a general conclusion the codes available in this chapter are not detailed enough for the purposes of occupational disease notification or surveillance. These codes may be used, but more detailed national or local classification systems for exposures should be preferred. A widely accepted and adapted international classification system would be needed. For classification of the causes of occupational injuries see section 1.3.

CODE	EXTERNAL CAUSE
W42	Exposure to noise
W43	Exposure to vibration
W88	Exposure to ionizing radiation
W89	Exposure to man-made visible and ultraviolet light
W90	Exposure to other nonionizing radiation
W91	Exposure to unspecified type of radiation
X45	Accidental poisoning by and exposure to alcohol
X46	Accidental poisoning by and exposure to organic solvents and halogenated hydrocarbons and their vapours
X47	Accidental poisoning by and exposure to other gases and vapours
X48	Accidental poisoning by and exposure to pesticides
X49	Accidental poisoning by and exposure to other and unspecified chemicals and noxious substances
X50	Overexertion and strenuous or repetitive movements
Y96	Work-related condition

## A.17 Factors influencing health status and contact with health services (Z00-Z99)

Chapter XXI of ICD-10 (Z00-Z99) contains codes for occasions when circumstances other than a disease, injury or external cause classifiable to categories A00-Y89 are recorded as “diagnoses” or “problems”. Some of these codes are relevant in surveillance of working populations and are listed below.

CODE	FACTOR	NOTES
Z02.-	Examination and encounter for administrative purposes Z02.1 pre-employment examination	Note: excludes Z10.0
Z03.-	Medical observation and evaluation for suspected diseases and conditions See ICD-10 for subcategories	
Z04.-	Examination and observation for other reasons Z04.2 Examination and observation following work accident Z04.8 Examination and observation for other specified purposes	
Z10.-	Routine general health check-up of defined subpopulation Z10.0 Occupational health examination	Note: excludes Z02.1
Z57.-	Occupational exposure to risk factors Z57.0 Occupational exposure to noise Z57.1 Occupational exposure to radiation Z57.2 Occupational exposure to dust Z57.3 Occupational exposure to other air contaminants Z57.4 Occupational exposure to toxic agents in agriculture Z57.5 Occupational exposure to toxic agents in industry Z57.6 Occupational exposure to extreme temperature Z57.7 Occupational exposure to vibration Z57.8 Occupational exposure to other risk-factors Z57.9 Occupational exposure to unspecified risk-factor	These codes should be used when the reason to contact health personnel was an occupational exposure, but no disease or adverse health effects could be verified after the examinations
Z71.-	Persons encountering health services for other counselling and medical advice, not elsewhere classified Z71.8 Other specified counselling	Counselling for occupational health purposes

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