

INTERNATIONAL LABOUR ORGANIZATION

**Technical backgrounder on the modified  
and newly introduced items proposed to be  
included in the updated list of occupational  
diseases annexed to the List of Occupational  
Diseases Recommendation, 2002 (No. 194)**

**Working document for the Meeting of Experts on  
updating the List of Occupational Diseases**  
(Geneva, 13-20 December 2005)

InFocus Programme on Safety and Health at Work (SafeWork)  
Geneva, October 2005





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## Contents

	<i>Page</i>
1. Diseases caused by agents .....	1
1.1. Diseases caused by chemical agents .....	1
1.1.32. “Diseases caused by ammonia” as a new item .....	1
1.1.33. “Diseases caused by isocyanates” as a new item.....	1
1.1.34. “Diseases caused by pesticides” as a new item .....	2
1.1.35. “Diseases caused by sulphur oxides” as a new item.....	4
1.1.36. “Diseases caused by any other chemical agents not mentioned in the preceding items 1.1.1 to 1.1.35 where a link is established between the exposure to these chemical agents arising from work activity and the disease contracted by the worker” as a modified item of the previous 1.1.32 .....	4
1.2. Diseases caused by physical agents .....	5
1.2.3. “Diseases caused by work in compressed and decompressed air” as a modified item of the previous 1.2.3.....	5
1.2.5. “Diseases due to radiofrequency radiations” as a new item .....	5
1.2.6. “Diseases caused by optical (ultraviolet, visible light, infrared) radiations” as a modified item of the previous 1.2.6, and as a result of the previous 1.2.5 “Diseases caused by heat radiation” is redundant and deleted .....	6
1.2.7. “Diseases caused by extreme temperature” as a modified item of previous 1.2.7 .....	7
1.2.8. “Diseases caused by any other physical agents not mentioned in the preceding items 1.2.1. to 1.2.7 where a link is established between the exposure to these physical agents arising from work activity and the disease contracted by the worker” as a modified item of the previous 1.2.8.....	7
1.3. Diseases caused by biological agents .....	7
1.3.1. “Brucellosis” as a new item.....	7
1.3.2. “Diseases caused by hepatitis B virus (HBV) and C virus (HCV)” as a new item .....	8
1.3.3. “Diseases caused by HIV” as a new item.....	8
1.3.4. “Tetanus” as a new item .....	8
1.3.5. “Tuberculosis” as a new item .....	9
1.3.6. “Diseases caused by any other biological agents not mentioned in the preceding items 1.3.1 to 1.3.5 where a link is established between the exposure to these biological agents arising from work activity and the disease contracted by the worker” as a modified item of the previous 1.3.1.....	9
2. Diseases by target organ systems .....	9
2.1. Occupational respiratory diseases.....	9
2.1.3. “Bronchopulmonary diseases caused by cotton dust (byssinosis), or flax, hemp or sisal dust” (editorial change).....	9
2.1.10. “Any other respiratory diseases not mentioned in the preceding items 2.1.1 to 2.1.9 where a link is established between the exposure to risk factors arising from work activity and the disease contracted by the worker” as a modified item of the previous 2.1.10 .....	10

2.2.	Occupational skin diseases .....	10
2.2.1.	“Allergic contact dermatoses and contact urticaria caused by recognized allergy provoking agents not included in other items” as a new item .....	10
2.2.2.	“Irritant contact dermatoses caused by other recognized irritant agents not included in other items” as a new item.....	10
2.3.	Occupational musculoskeletal disorders.....	11
2.3.1.	“Radial styloid tenosynovitis due to repetitive movements, forceful exertions and extreme postures of the wrist” as a new item.....	11
2.3.2.	“Chronic crepitant tenosynovitis of hand and wrist due to repetitive movements, forceful exertions and extreme postures of the wrist” as a new item .....	11
2.3.3.	“Olecranon bursitis due to prolonged pressure of the elbow region” as a new item .....	12
2.3.4.	“Prepatellar bursitis due to prolonged stay in kneeling position” as a new item .....	12
2.3.5.	“Epicondylitis due to repetitive forceful work” as a new item.....	12
2.3.6.	“Meniscus lesions following extended periods of work in a kneeling or squatting position” as a new item.....	13
2.3.7.	“Carpal tunnel syndrome” as a new item .....	13
2.3.8.	“Any other musculoskeletal disorders not mentioned in the preceding items 2.3.1 to 2.3.7 where a link is established between exposure to risk factors arising from work activity and the disease contracted by the worker” as a new item .....	14
2.4.	“Mental and behavioural disorders” as a new section .....	14
2.4.1.	“Post-traumatic stress disorder due to a stressful event or situation” as a new item .....	14
2.4.2.	“Psychosomatic psychiatric syndromes caused by mobbing” as a new item .....	15
2.4.3.	“Any other mental or behavioural disorder not mentioned in preceding items 2.4.1 to 2.4.2 where a link is established between exposure to risk factors arising from work activities and the mental disorder contracted by the worker” as a new item .....	16
3.	Occupational cancer.....	16
3.1.	Cancer caused by the following agents.....	16
3.1.4.	“Chromium VI and chromium VI compounds” as a modified item of the previous 3.1.4 .....	16
3.1.15.	“Arsenic and its compounds” as a new item .....	16
3.1.16.	“Beryllium and its compounds” as a new item.....	17
3.1.17.	“Cadmium and its compounds” as a new item .....	17
3.1.18.	“Erionite” as a new item.....	17
3.1.19.	“Ethylene oxides” as a new item .....	17
3.1.20.	“Diseases caused by formaldehyde” as a new item.....	18
3.1.21.	“Hepatitis B virus (HBV) and C virus (HCV)” as a new item .....	18
3.1.22.	“Silica” as a new item.....	19
3.1.23.	“Cancer caused by any other agents not mentioned in the preceding items 3.1.1 to 3.1.22 where a link is established between exposure to these agents arising from work activity and the disease contracted by the worker” as a modified item of the previous 3.1.15.....	19

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# Technical backgrounder on the modified and newly introduced items proposed to be included in the updated list of occupational diseases annexed to the List of Occupational Diseases Recommendation, 2002 (No. 194)

## 1. Diseases caused by agents

### 1.1. Diseases caused by chemical agents

#### 1.1.32. *“Diseases caused by ammonia” as a new item*

Ammonia: Chemical formula:  $\text{NH}_3$ . ammonia is a colourless gas with a strong odour. Ammonia is principally used as a feedstock in the manufacture of fertilizers and other chemical substances and is also used as a refrigerant. Ammonia is a corrosive chemical and can irritate and burn the skin and eyes, leading to permanent damage. Exposure to ammonia can irritate the nose, mouth and throat causing coughing and wheezing. Breathing ammonia can irritate the lungs causing coughing and shortness of breath and repeated exposure may cause bronchitis. High exposure can cause pulmonary oedema. Exposure can also cause headaches, loss of sense of smell, nausea and vomiting. Fatal accidents may occur. Preventive measures are known and it is important that they are implemented, including preparedness in the case of a massive release of ammonia.

#### 1.1.33. *“Diseases caused by isocyanates” as a new item*

Isocyanates (Monoisocyanates (methyl isocyanates) and diisocyanates (methylene diphenyl isocyanate MDI, toluene diisocyanate TDI, etc.) are commonly used in some industries. For example, monoisocyanates are mainly used as synthesis agents in the chemical industry, while diisocyanates are used as hardeners in polyurethane varnishes and lacquers, in the manufacture of synthetic fibres, polyurethane foam, polyurethane-based adhesives, and paints containing organic isocyanates.

Health effects include:

- Irritant and corrosive effects: Isocyanates irritate the skin and the ocular and respiratory mucous membranes. Direct contact (or exposure to high concentrations) can lead to palpebral and corneal disorders with eye burns, photophobia, blepharospasm, conjunctival hyperhaemia and superficial corneal ulcerations. Irritation of the airways may lead to an acute pulmonary oedema with bronchoconstriction and possible development of severe bronchiolitis, death from acute respiratory distress syndrome or fibrosis-type sequelae.
- Immuno-allergic effects (diisocyanates): allergic contact dermatitis; allergic rhinitis and conjunctivitis; asthma; hypersensitivity pneumonitis.
- Chronic obstructive bronchopathy.

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This item is included in the 2003 European schedule of occupational diseases and in some national lists (Algeria, Czech Republic, Denmark, France, Italy, Republic of Korea, Portugal, Switzerland, United Kingdom).

#### **1.1.34. “Diseases caused by pesticides” as a new item**

Pesticides are chemicals specifically manufactured to be toxic to target organisms. They are deliberately introduced into the environment in large amounts and are used by several million workers all over the world. They include insecticides, herbicides, fungicides, nematocides, rodenticides and other chemicals substances as mixtures (e.g. crow and mole poisons).

The main chemical classes of pesticides are the following:

- organophosphorous compounds (insecticides and herbicides);
- carbamates (insecticides);
- pyrethroids (insecticides);
- dithiocarbamates (fungicides);
- organochlorinated compounds (different uses);
- quaternary ammonium compounds (herbicides);
- phenoxy acids derivatives (herbicides);
- coumarine derivatives (rodenticides);
- miscellaneous (includes compounds allocated indifferent classes by different authors, and many new compounds, whose chemical structure complexity involves difficulty in the definition of the chemical class).

Main occupational uses and sources of exposure: The formulation of commercial products (by mixing active ingredients with other co-formulants) has some exposure characteristics in common with pesticide use in agriculture. In fact, since formulation is typically performed by small industries which manufacture many different products in successive operations, the workers are exposed to each of several pesticides for a short time.

Acute health effects:

- Organochlorinated compounds

Aldrin, endrin, dieldrin and toxaphene are most frequently implicated in acute poisoning.

Intoxication is characterized by gastrointestinal symptoms: nausea, vomiting, diarrhoea and stomach pains. The basic syndrome is cerebral: headaches, dizziness, ataxia and paraesthesia. In addition to the cerebral signs, acute poisoning may lead to bulbar paralysis of the respiratory and/or vasomotor centres, which causes acute respiratory deficiency or apnoea, and to severe collapse.

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- Organophosphorous compounds

The toxic action of organic phosphates is through inhibition of the cholinesterase enzymes. Signs and symptoms of organophosphate poisoning can be explained on the basis of cholinesterase inhibition:

- Early or mild poisoning may be hard to distinguish because of a number of other conditions; heat exhaustion, food poisoning, encephalitis, asthma and respiratory infections share some of the symptoms and confuse the diagnosis. Symptoms most often appear in this order: headaches, fatigue, giddiness, nausea, sweating, blurred vision, tightness in the chest, abdominal cramps, vomiting and diarrhoea.
- In more advanced poisoning, difficulty breathing, tremors, convulsions, collapse, coma, pulmonary oedema and respiratory failure follow.
- The more advanced the poisoning, the more obvious the typical signs of cholinesterase inhibition, i.e. pinpoint pupils; rapid, asthmatic type breathing; marked weakness; excessive sweating; excessive salivation; and pulmonary oedema mental confusion, tremors, convulsions, coma, delayed polyneuritis.

Chronic health effects:

- Organochlorinated compounds

Chronic intoxication is characterized by damage to the nervous, digestive and cardiovascular systems and the blood-formation process. Organochlorinated compounds have an effect on the central nervous system and are capable of causing convulsions, which frequently appear to be epileptic in character.

- Organophosphorous compounds

Chronic exposure to organophosphorous compounds may be cumulative in the sense that repeated frequent exposure can reduce cholinesterase faster than it can be regenerated, to the point where very slight exposure can precipitate acute poisoning. This could be considered as subacute poisoning.

Peripheral neuropathy: Certain substances (phosphate triesters) may cause peripheral sensory and motor neuropathy in the lower limbs.

The use of the general term “pesticides” is justified in various ways, in particular:

- the complexity of their composition: in addition to one or two active principles, they contain solvents, emulsifiers, tension-active products, preservative agents, colouring and vomiting agents;
- pesticides are usually classified according to the pest or organisms they are designed to kill: insecticides, etc.;
- many national legislations refer to “pesticides” as a group and at the international level, such is also the case for: the FAO International Code of Conduct on the Distribution and Use of Pesticides (amended version), 1990, and the Prior Informed Consent (PIC) procedure: the Rotterdam Convention which entered into force on 24 February 2004 (UNEP).

Countries that have incorporated pesticides in their lists of occupational diseases include: Bangladesh, India, Lithuania, Luxembourg, Mexico, Serbia and Montenegro, Tunisia and Ukraine.

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### **1.1.35. “Diseases caused by sulphur oxides” as a new item**

Sulphuric acid (H<sub>2</sub>SO<sub>4</sub>) is a colourless or slightly brown, hygroscopic, oily liquid. Vaporization can begin at 30°C. Sulphur trioxide is emitted when heated. Fuming sulphuric acid, a solution of sulphur trioxide in concentrated sulphuric acid, produces thick white fumes. Sulphur dioxide (SO<sub>2</sub>) is a colourless pungent gas, heavier than air. It converts to sulphurous acid (H<sub>2</sub>SO<sub>3</sub>) in water. Sulphur trioxide (SO<sub>3</sub>) (synonym: sulphuric acid anhydride) is a solid crystalline substance which produces pungent-smelling fumes and converts in a thermal reaction with water to sulphuric acid (H<sub>2</sub>SO<sub>4</sub>).

Sulphuric acid is used as battery acid in accumulators, in electroplating and in the chemical industry (production of fertilizer) as well as in laboratories.

Acute health effects include:

- Irritant and corrosive effects: SO<sub>2</sub> is converted to sulphurous acid by moisture on sweating skin or on mucous membranes. H<sub>2</sub>SO<sub>4</sub> is harmful not only as a liquid but also as acidic vapour and, because it has a great affinity to water, it corrodes the skin and the underlying tissue. Although the following effects apply for both substances, SO<sub>2</sub> mainly produces irritant effects and H<sub>2</sub>SO<sub>4</sub> produces caustic effects.

These substances are highly irritant to the skin (burns), the eyes (possibility of keratoconjunctivitis, deep corneal ulcerations, lid lesions) and the respiratory tract (in severe cases: bronchoconstriction, laryngospasm, pulmonary oedema with a latent period of variable length).

Chronic health effects include:

- Irritant and corrosive effects: chronic irritation leads to drying and ulcerations of the skin (particularly the hands), chronic paronychia and perionyxis, reddened glossy tongue, taste disturbances. Chronic irritation of the respiratory tract can cause ulcerations of the nasal septum, nose-bleeding and possibly atrophic rhinitis and chronic obstructive ventilation disturbance.
- Damage to dental enamel: the compounds particularly affect the incisors: loss of lustre, streaks, decalcification, yellow or brown flecks, increased sensitivity to temperature changes.

This item has been included in the 2003 European schedule of occupational diseases. Countries that have incorporated this item in their lists of occupational diseases include: Finland, Czech Republic, Italy and Serbia and Montenegro.

### **1.1.36. “Diseases caused by any other chemical agents not mentioned in the preceding items 1.1.1 to 1.1.35 where a link is established between the exposure to these chemical agents arising from work activity and the disease contracted by the worker” as a modified item of the previous 1.1.32**

This is to accommodate the essence of subparagraph (b) of Article 1 of the Protocol of 2002 to the Occupational Safety and Health Convention, 1981 (No. 155) which states that the term “occupational disease” covers any disease contracted as a result of an exposure to risk factors arising from work activity.

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## 1.2. Diseases caused by physical agents

### 1.2.3. *“Diseases caused by work in compressed and decompressed air” as a modified item of the previous 1.2.3*

Occupational exposure to decompressed air can occur in the following situations: manufacturing or maintenance companies often modify, adapt or repair aircraft equipment during flight without passengers (similar activity takes place during the testing of new aircraft); combat planes usually operate at high altitudes and crew members are protected by masks supplying pure oxygen at a pressure close to ground level atmospheric pressure; in flight, during repair, changes, and in unplanned incidents, pressure may become considerably lower than that of ground level atmospheric pressure.

Physiological effects may occur both when low pressure is established and when atmospheric pressure corresponding to ground level is re-established. Organs most susceptible are the middle ear and sinuses.

Health effects: barotrauma of the middle ear. Symptoms and signs: sudden pain, hearing loss, bleeding from the ear, and burst eardrum.

Chronic/subacute health effects: barotrauma of the middle ear. Symptoms and signs include: increasing pain, hearing loss, inflammation and bleeding from the ear.

Diseases caused by decompressed air are included in the 2003 European schedule of occupational diseases. Countries whose lists of occupational diseases cover this item include: Algeria, Belgium, China, Colombia, Czech Republic, France, Japan, Republic of Korea, Lithuania, Latvia, Poland, Romania and Serbia and Montenegro.

### 1.2.5. *“Diseases due to radiofrequency radiations” as a new item*

Radiofrequency (RF) fields are part of the electromagnetic spectrum. The RF part of the electromagnetic spectrum is generally defined as the part of the spectrum where electromagnetic waves have frequencies within the range of approximately 3 kilohertz to 300 gigahertz.

Common sources of RF fields include: FM radio (30-300 MHz), mobile telephones, television broadcast, microwave ovens, medical diathermy (0.3-3 GHz), radar, satellite links, microwave communications (3-30 GHz) and the sun (3-300 GHz). RF fields are non-ionizing radiations (NIR). RF fields may produce different effects on human beings. These effects depend on the frequency and intensity of the RF field. Most adverse health effects that could occur from exposure to RF fields between 1 MHz and 10 GHz are consistent with responses to induced heating, resulting in rises in tissue or body temperatures higher than 1°C. Tissue damage in humans could occur during exposure to high RF levels because of the body's inability to cope with or dissipate the excessive heat that could be generated. Induced heating in body tissues may provoke various physiological and thermoregulatory responses, including a decreased ability to perform mental or physical tasks as body temperature increases. Induced heating may affect foetal development. Birth defects could occur when the temperature of the foetus is raised by 2-3°C for a number of hours. Induced heating can also affect male fertility and lead to the induction of eye opacities (cataracts). Current scientific evidence indicates that exposure to RF fields is unlikely to induce or promote cancers. Relatively high levels of exposure to RF fields can affect workers in the broadcasting, transport and communications industries when working in close proximity to RF transmitting antennas and radar systems.

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**1.2.6. “Diseases caused by optical (ultraviolet, visible light, infrared) radiations” as a modified item of the previous 1.2.6, and as a result of the previous 1.2.5 “Diseases caused by heat radiation” is redundant and deleted**

Electromagnetic radiation with wavelengths in the range between 100 nm and 1 mm is widely termed “optical radiation”. Ultraviolet (UV) radiation is in the wavelength range between 100 nm and 400 nm, visible light radiation is from 400 to 760 nm and infrared (IR) radiation from 76 nm to 1 mm. Heat and laser radiations within these wavelengths are also included under this heading.

Main occupational uses and sources of exposure:

- UV: Bactericidal lamps, plasma arc and xenon welding, sun’s rays especially at high altitudes, industrial lasers.
- IR: Sun’ s rays, sources of radiant heat, industrial lasers.

Health effects:

- Pathological effects of ultraviolet radiation

The extent to which UV radiation penetrates the body, and its biological effects, vary according to the wavelength: UV(C) is absorbed through the skin, conjunctiva and cornea, but does not penetrate any further; UV(B) penetrates as far as the lens; and UV(A) may reach the retina.

Acute effects:

- Keratoconjunctivitis: Painful disorder affecting both eyes, with conjunctiva hyperaemia and photophobia. If the cause is a UV laser, the cornea may be severely affected with subsequent opacification.
- Photoretinitis: Phototrauma of the retina; relatively painless disorder of the retina, with transient blindness, persistence of visual image and scotoma.
- Cutaneous effects: Erythema, skin burns.

Chronic effects:

- Actinic cataract: This is usually a disorder of the anterior capsule of the lens, extending to the sub-capsular epithelium.
- Skin cancers: These appear on uncovered parts of the body (head, neck, hands and forearms) and are mainly associated with outdoor occupations exposed to solar radiation. They include basal and squamous cell carcinomas and malignant melanomas.
- Pathological effects of visible light

Acute effects:

- Photoretinitis: Photochemical damage may be caused by blue light emitted at wavelengths from 400 to 550 nm or broad spectrum light emitted at high intensity (xenon projectors, arc lamps, flashguns). Documented pathological

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effects are those caused by class III and IV lasers emitting visible light, which can cause acute lesions, ocular pain, transient blindness and persistence of visual image and chromatic deficiency. Photoretinitis can also develop asymptotically during exposure to continuous-wave lasers; a thorough examination may discover the presence of a scotoma.

- Pathological effects of infrared radiation

Acute effects:

- Thermal effects on the anterior part of the eye and surrounding areas: Burning sensation on the skin around the eyes, blepharitis and keratitis.
- Heat-related retinal disorders: Sight disorders with scotoma, immediate edematous lesions, with pigmentary lesions to the fundus of the eye appearing later, anomalies in the retina identified by retinal angiography.

Chronic effects:

- Glass workers' cataract (heat-induced cataract): This starts in the posterior cortex of the lens and forms a web, leading to irregularly shaped discoid posterior opacification.

Countries that have incorporated optical radiations in their lists of occupational diseases include: Hong Kong (China), Colombia, Finland, India, Italy, Republic of Korea, Latvia, Lithuania, Serbia and Montenegro, and United Kingdom.

### **1.2.7. “Diseases caused by extreme temperature” as a modified item of previous 1.2.7**

This is to include other diseases caused by exposure to extreme temperatures.

### **1.2.8. “Diseases caused by any other physical agents not mentioned in the preceding items 1.2.1. to 1.2.7 where a link is established between the exposure to these physical agents arising from work activity and the disease contracted by the worker” as a modified item of the previous 1.2.8**

This is done for the same reasons as for the modified open item for chemical agents (previous 1.1.32) and for accommodation of the essence of subparagraph (b) of Article 1 of the Protocol of 2002 to the Occupational Safety and Health Convention, 1981 (No. 155), which states that the term “occupational disease” covers any disease contracted as a result of an exposure to risk factors arising from work activity.

## **1.3. Diseases caused by biological agents**

### **1.3.1. “Brucellosis” as a new item**

Brucellosis is a zoonosis caused by bacterium of the genus *Brucella* (coccobacilli *Brucella melitensis*, *Brucella suis* or *Brucella abortus*). The organism grows slowly and is resistant to drying but sensitive to acid and heating. Infection may be acute, subacute, chronic or clinically unapparent. Infective animals may or may not show signs of the

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disease. Any occupation could be at risk if they involve or are likely to involve exposure to the following animals or products: goats (*B. melitensis*), pigs (*B. susis*), cattle (*B. abortus*). Contact with infectious materials such as animal blood is an important mode of infection for livestock growers and veterinarians. Inhalation and ingestion are also potential routes of infection. Health effects include: acute, subacute and chronic brucellosis, articular, cardiac and neurological complications.

Countries having brucellosis in their lists of occupational diseases include: Algeria, Chile, China, Czech Republic, France, Lithuania, Malaysia, Mexico, South Africa and United Kingdom. Brucellosis is included in the 2003 European schedule of occupational diseases.

### **1.3.2. “Diseases caused by hepatitis B virus (HBV) and C virus (HCV)” as a new item**

Viral hepatitis refers to infections of the liver caused by a number of viruses including in particular hepatitis B and hepatitis C. Individuals infected with other viruses such as Epstein-Barr and cytomegalovirus may also present with hepatic illness. Although all these agents could cause occupationally related infection, by far the most important/common type worldwide is hepatitis B and C virus (serum hepatitis). Occupations involving or likely to involve exposure to blood, blood derivatives, body fluids and biological samples are under the risk of infection with these viruses. Health impairments include: acute hepatitis, persistent hepatitis, chronic active hepatitis, post-hepatic cirrhosis and post-cirrhotic liver cancer.

Countries with viral hepatitis in their lists of occupational diseases include: Algeria, Australia, Belgium, Hong Kong (China), Czech Republic, France, Italy, Republic of Korea, Lithuania, Malaysia, Mexico, Portugal and United Kingdom. Viral hepatitis is included in the 2003 European schedule of occupational diseases.

### **1.3.3. “Diseases caused by HIV” as a new item**

Human immunodeficiency virus HIV is a retrovirus. Two types of HIV exist: HIV-1 and HIV-2. They result in a similar spectrum of clinical diseases though HIV-2 is thought to be less virulent. HIV-1 is primarily responsible for the HIV/AIDS pandemic while HIV-2 is found mainly in West Africa. HIV affects and destroys many types of human cells, in particular the CD4 (T helper, T-4) cell and cells in the central nervous system. With a decline in the number and function of the CD4 cells, there is progressive depletion of immune function. HIV-related symptoms or diseases will emerge with occurrence of opportunistic infections and tumours. Occupational groups under the threat of HIV infection include doctors, nurses, laboratory workers, phlebotomists, technicians, maintenance workers and respiratory therapists.

Countries with HIV/AIDS in their lists of occupational diseases include: Australia, Malaysia and Tunisia.

### **1.3.4. “Tetanus” as a new item**

Tetanus is caused by *Clostridium tetani*, which is an anaerobic, gram-positive, spore-forming bacillus. The resistance of the spores to drying and heating has ensured its widespread distribution in soil and animal faeces. Its anaerobic characteristics and the toxin produced within the bacterium during its early stages of growth have meant that it remains a particularly serious sequela of penetrating wounds, particularly where ignorance,

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poverty and poorly developed health services prevail. The disease is characterized by rigidity and spasmodic contractions of voluntary muscles.

Agricultural workers as well as construction workers are probably at greatest risk due to their increased chances of acquiring penetrating wounds contaminated with soil. Prevention of tetanus by immunization is well established.

Countries that have incorporated tetanus in their lists of occupational diseases include: Algeria, Belgium, Chile, France, Lithuania, Mexico, Portugal, Tunisia and United Kingdom. This disease is included in the 2003 European schedule of occupational diseases.

### **1.3.5. “Tuberculosis” as a new item**

Human tuberculosis is largely confined to infection with mycobacterium tuberculosis. Those at risk are, in the main, health-care workers and laboratory personnel, although farmers and veterinarians may be exposed to *M. bovis*. Prevention (including immunization) and treatment are well established. Two of the main issues are early diagnosis and appropriate health-care follow-up. In both cases, surveillance, recording and notification are essential tools for preventive purposes.

Countries that have incorporated tuberculosis in their lists of occupational diseases include: Algeria, Hong Kong (China), Czech Republic, Finland, France, Republic of Korea, Lithuania, Malaysia, Mexico, Portugal, South Africa and United Kingdom. Tuberculosis is included in the 2003 European schedule of occupational diseases.

### **1.3.6. “Diseases caused by any other biological agents not mentioned in the preceding items 1.3.1 to 1.3.5 where a link is established between the exposure to these biological agents arising from work activity and the disease contracted by the worker” as a modified item of the previous 1.3.1**

This is done for the same reasons as for the modified open item for chemical agents (previous 1.1.32) and for accommodation of the essence of subparagraph (b) of Article 1 of the Protocol of 2002 to the Occupational Safety and Health Convention, 1981 (No. 155), which states that the term “occupational disease” covers any disease contracted as a result of an exposure to risk factors arising from work activity.

## **2. Diseases by target organ systems**

### **2.1. Occupational respiratory diseases**

#### **2.1.3. “Bronchopulmonary diseases caused by cotton dust (byssinosis), or flax, hemp or sisal dust” (editorial change)**

This item is a replica of item 3 of Schedule I. List of occupational diseases appended to the Employment Injury Benefits Convention, 1964 (No. 121). However, it has been noted that a misplacement of the word “byssinosis” due to an editorial oversight has occurred and the Office proposes that this oversight be corrected by a minor rewording of

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the item which should now read “Bronchopulmonary diseases caused by cotton dust (byssinosis), or flax, hemp or sisal dust”.

**2.1.10. “Any other respiratory diseases not mentioned in the preceding items 2.1.1 to 2.1.9 where a link is established between the exposure to risk factors arising from work activity and the disease contracted by the worker” as a modified item of the previous 2.1.10**

This is done for the same reasons as for the modified open item for chemical agents (previous 1.1.32) and for accommodation of the essence of subparagraph (b) of Article 1 of the Protocol of 2002 to the Occupational Safety and Health Convention, 1981 (No. 155), which states that the term “occupational disease” covers any disease contracted as a result of an exposure to risk factors arising from work activity.

## **2.2. Occupational skin diseases**

**2.2.1. “Allergic contact dermatoses and contact urticaria caused by recognized allergy provoking agents not included in other items” as a new item**

The most common presentations for occupationally caused dermatoses are those of irritant and allergic contact dermatitis. The causal agents are complex molecules, usually proteins, which are complete antigens, or molecules with a molecular mass of less than 2000 to 3000 daltons, which are haptens or incomplete antigens. Haptens are the most common cause of allergic contact dermatitis. Examples of the causal agents include macromolecules (substances of animal or plant origin e.g. woods), low molecular mass substances, metallic salts (e.g. nickel salts, chromates), resins, hardener (e.g. epoxy-resins), dyes and dye intermediates (e.g. paraphenylene-diamine), photo-allergens, ultra-violet cured inks containing acrylates and latex gloves. Health effects include acute eczematous contact dermatitis, chronic eczematous contact dermatitis and urticaria.

Occupational allergic contact dermatoses and contact urticaria are recognized in the lists of occupational diseases of many countries (e.g. Algeria, Australia, Bangladesh, Chile, China, Costa Rica, Denmark, France, Lithuania, Malaysia, Romania, South Africa, and Serbia and Montenegro). This item is listed among the selected occupational diseases in the WHO International Statistical Classification of Disease and Related Health Problems (ICD-10) in Occupational Health (1999).

**2.2.2. “Irritant contact dermatoses caused by other recognized irritant agents not included in other items” as a new item**

Causal agents include non-corrosive substances and preparations, which, through immediate, prolonged or repeated contact with the skin or mucous membranes, cause inflammation, and corrosive substances and preparations, which, on contact with living tissues, cause severe damage. Some physical agents are capable, in themselves, of producing an irritation reaction, such as, for example, dusts in contact with the mucous membranes of the eyes or respiratory tract or even cutaneous friction. Strong alkalis and acids, soaps and detergents are often used at work and are skin irritants.

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Countries having occupational irritant contact dermatoses in their lists of occupational diseases include: Bangladesh, Chile, Costa Rica, Denmark, India, Lithuania, Malaysia, Romania and United Kingdom. This item is listed among the selected occupational diseases in the WHO International Statistical Classification of Disease and Related Health Problems (ICD-10) in Occupational Health (1999).

## **2.3. Occupational musculoskeletal disorders**

### **2.3.1. “Radial styloid tenosynovitis due to repetitive movements, forceful exertions and extreme postures of the wrist” as a new item**

This disease is an entrapment tendinitis of the tendons contained within the first dorsal compartment at the wrist, resulting in pain with thumb motion. De Quervains tenosynovitis is a variant of radial styloid tenosynovitis characterised by a localized swelling at the base of the thumb and thickening of the fibrous sheath or reticulum.

Vigorous and repetitive movements of the upper limb joints can cause iterative microtrauma and wear-and-tear phenomena resulting in the radial styloiditis. Any thickening of the tendons from acute or repetitive trauma restrains gliding of the tendons through the sheath. Efforts at thumb motion, especially when combined with radial or ulnar deviation of the wrist, cause pain and perpetuate the inflammation and swelling.

High-risk occupations include all work involving repetitive movements, forceful exertions and extreme postures of the wrist (e.g. meat, fish and poultry processing, construction and carpentry, small-component assembly and textile work).

This item is included in some national lists of occupational diseases, including those of: Argentina, Brazil, Hong Kong (China), Italy, Portugal and Romania. It is also listed in the selected occupational diseases of the WHO International Statistical Classification of Disease and Related Health Problems (ICD-10) in Occupational Health (1999).

### **2.3.2. “Chronic crepitant tenosynovitis of hand and wrist due to repetitive movements, forceful exertions and extreme postures of the wrist” as a new item**

Chronic crepitant tenosynovitis of hand and wrist is coded as M70.0 in WHO ICD-10. Tenosynovitis is inflammation of the synovial lining of the tendon sheath. Inflammation of the tendon itself is called tendinitis. Tendons most frequently affected are the radial extensors of the wrist and the abductor pollicis longus or extensor pollicis brevis. Chronic crepitant tenosynovitis can be one of the commonest lesions found in factory workers whose work involves repetitive movements, forceful exertions and extreme postures of the wrist, and especially a combination of these risk factors. Five main factors appear to be involved in aetiology: (1) occupational changes result in unusual work; (2) return to work after absence; (3) local “strain” either repetitive or a single “strain”; (4) direct local blunt trauma; and (5) simple repetitive stereotyped movement associated with intensity of effort and speed.

When repetitive motion is relatively mild or intermittent, fibrous tissue develops within the sheath and gradually constricts it to form chronic tenosynovitis. Prolonged tenosynovitis can result in stenosing tenosynovitis. Symptoms may include pain, either aching or shooting pains up the arm, swelling, creaking tendons (crepitus) and restriction

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of movements. Painful impairment of motion involving the tendon can cause an inability to grip items, such as a cup.

### **2.3.3. “Olecranon bursitis due to prolonged pressure of the elbow region” as a new item**

Olecranon bursitis is inflammation of the bursa overlying the olecranon process at the proximal aspect of the ulna. The bursa is located between the ulna and the skin at the posterior tip of the elbow. Due to its superficial location, this bursa is susceptible to inflammation from either acute or repetitive (cumulative) trauma such as repetitive rubbing of the olecranon region against a desktop during writing and prolonged pressure of the elbow region. Occupations and industries affected are the same as those mentioned under the two new items “Radial styloid tenosynovitis due to repetitive movements, forceful exertions and extreme postures of the wrist” and “Chronic crepitant tenosynovitis of hand and wrist due to repetitive movements, forceful exertions and extreme posture of the wrist”.

This item is coded as M70.2 in WHO ICD-10 and listed as item 506.12 in the 2003 European schedule of occupational diseases.

### **2.3.4. “Prepatellar bursitis due to prolonged stay in kneeling position” as a new item**

The prepatellar bursa is a superficial bursa (a small lubricating sac) located just in front of the patella (kneecap) with a thin synovial lining located between the skin and the patella. The bursa enables the kneecap to move smoothly under the skin. Normally, it does not communicate with the joint space and contains a minimal amount of fluid. If the bursa becomes inflamed, it fills with fluid and causes swelling at the top of the knee. This condition is called prepatellar bursitis. Common findings reported by workers with prepatellar bursitis may include the following: knee pain, swelling of the knee, redness of the knee, difficulty with ambulation, inability to kneel on the affected side, relief of pain with rest, history of repetitive motion and history of occupation requiring excessive kneeling. Occupation and industries affected include plumbers, carpet layers, roofers, coal miners, gardeners and other workers who spend a lot of time on their knees.

This disease is coded as M70.4 in the WHO ICD-10 and is item 506.11 in the 2003 European schedule of occupational diseases.

### **2.3.5. “Epicondylitis due to repetitive forceful work” as a new item**

Medial epicondylitis is a condition when the inner part of the elbow becomes painful and tender, usually as a result of a specific strain, overuse, or a direct bang. Although called “golfer’s elbow”, medial epicondylitis is much more commonly seen in people who are overusing their arm doing something else. The most common cause is overuse of the wrist flexors that are attached to the bone at this part of the elbow. All the flexor muscles of the hand attach to the elbow at the inner part (the medial epicondyle). If they are strained or overused they become inflamed. Lateral epicondylitis is an overuse injury involving the extensor/supinator muscles that originate on the lateral epicondylar region of the distal humerus. It is a chronic inflammation at the origin of the extensor muscles of the forearm from the lateral epicondyle of the humerus, as a result of unusual or repetitive strain. Lateral epicondylitis has been demonstrated to occur in up to 50 per cent of tennis players (thus it is also called tennis elbow). However, this condition is not limited to tennis players and has been reported to be the result of overuse from many activities. Occupations

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and industry affected include construction workers, such as wallboard installers, roofers and masons, meat cutters, packers and other work involving repetitive and forceful movements.

This disease is coded as M77.0 (medial epicondylitis) and M77.1 in WHO ICD-10 and is covered by item 506.23 of the 2003 European schedule of occupational diseases.

### **2.3.6. “Meniscus lesions following extended periods of work in a kneeling or squatting position” as a new item**

The cartilages of the knee are thin pads of gristle, each the shape of a crescent. There are two in each knee, lying side by side. Medial cartilage lies in the inside compartment, while the lateral cartilage is in the outside compartment of the knee joint. The lower surface of each cartilage is flat, and lies on the upper surface of the shin bone (or tibia). The upper surface is concave and rests against the lower end of the thigh bone (or femur). As the knee bends and straightens, the cartilages glide very slightly forwards and backwards. The cartilages carry much of the load across the joint, from thigh bone to shin bone. They also act as shock absorbers. Damage to these cartilages result in tears. A so-called bucket-handle tear occurs near the outer edge of the cartilage and extends most of the way around the rim. This type of tear, which tends to affect the medial cartilage, often gets trapped in the centre of the joint. This causes locking of the knee. This means that the patient is unable to fully straighten the knee. A so-called parrot-beak tear goes from the edge into the substance of the cartilage. This can cause locking if large enough, or simply pain and swelling. Such a tear is more common in the lateral cartilage. A torn cartilage can also cause the knee to give way. A tear of the parrot-beak type in the lateral cartilage stimulates fluid to develop in the knee joint. It is forced through the tear to the outside of the cartilage, where it may form a noticeable cyst. These increase in size with physical activity, are painful and often quite obvious when the knee is bent. Tears occur when there is a sudden rotation of the knee while it is bent. It can also occur with sudden straightening of the knee. In general the tibia is fixed due to the foot being on the ground. Getting up from a squatting position may also tear a cartilage. Sometimes it is due to a more complex ligament injury following a major accident. Meniscus tears may occur even when the trauma is not significant. Repeated squatting can tear the meniscus. The timing of the injury is important to note, although patients often cannot describe a specific event.

This disease is covered by the item M23.2 in WHO ICD-10 and is item 506.30 in the 2003 European schedule of occupational diseases.

### **2.3.7. “Carpal tunnel syndrome” as a new item**

Carpal tunnel syndrome is a painful progressive condition caused by compression of a key nerve in the wrist. It occurs when the median nerve, which runs from the forearm into the hand, becomes pressed or squeezed at the wrist. Symptoms usually start gradually, with pain, weakness, or numbness in the hand and wrist, radiating up the arm. As symptoms worsen, people might feel tingling during the day, and decreased grip strength may make it difficult to form a fist, grasp small objects, or perform other manual tasks. The main risk factors of developing carpal tunnel syndrome are forceful repetitive work, vibration and extreme postures of the wrist or a combination of these risk factors. This disease is especially common in those performing assembly line work, meat, poultry and fish processors and construction workers. Other high risk occupations include cashiers, hairdressers, or knitters or sewers, people who do long hours of computer keyboarding, bakers who flex or extend the wrist while kneading dough, and people who flex the fingers and wrist in tasks such as milking cows, using a spray paint gun, and hand-weeding. Excessive use of vibrating hand tools may also cause carpal tunnel syndrome.

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Carpal tunnel syndrome was the sixth most common occupational disease in the European Communities in 2001. In Europe, the incidence rate was the highest in plant, machine operators, elementary occupations and craft and related workers. Cases occur in all sectors.

This disease is coded as G56.0 in WHO ICD-10 and is item 506.45 of the European schedule of occupational diseases.

**2.3.8. “Any other musculoskeletal disorders not mentioned in the preceding items 2.3.1 to 2.3.7 where a link is established between exposure to risk factors arising from work activity and the disease contracted by the worker” as a new item**

The proposal, as included in the Office questionnaire, has been slightly reworded. This has been done to ensure consistency with the open items in other sections.

**2.4. “Mental and behavioural disorders” as a new section**

Working pressure and excessive workload, lack of autonomy and social support at work, the dissolving traditional distinctions between home and workplace, emotional distress in a highly competitive environment, violence and mobbing have emerged as significant hazards in the contemporary workplace. Mental and behavioural disorders (depressions, neuroses, obsessive-compulsive disorders, etc.) can be caused by psychosocial risks at work. A feature of these disorders is their often multifactor origin. While it is relatively easy to demonstrate the origin of an illness related to exposure to harmful agents, in many situations it is more complicated to prove that work is the “only” or even “decisive” or “essential” cause of these disorders.

The following two new items were considered by the Office to involve adequate proof of their occupational origin and were proposed to underline their serious health implications and their frequent occurrence in the modern-day workplace.

**2.4.1. “Post-traumatic stress disorder due to a stressful event or situation” as a new item**

Post-traumatic stress disorder (PTSD) arises as a delayed or protracted response to a stressful event or situation (of either brief or long duration) of an exceptionally threatening or catastrophic nature, which is likely to cause pervasive distress in almost anyone. PTSD can occur as an acute disorder or have a delayed onset in which symptoms may occur more than 6 months after the trauma. Events and situations which could cause PTSD include:

- Workplace violence: Incidents where staff members are abused, threatened or assaulted in circumstances related to their work, including commuting to and from work, involving an explicit or implicit challenge to their safety, well-being or health.
- Physical violence: The use of physical force against another person or group that results in physical, sexual or psychological harm.
- Psychological violence (emotional abuse): The intentional use of power, including threat of physical force, against another person or group that can result in harm to physical, mental, spiritual, moral or social development. Such violence includes verbal abuse, bullying or mobbing, harassment, and threats.

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Workplace violence affects many occupations and industries but is more common in service industries, though some are more at risk than others. For example, the exposure of ambulance staff to violence is extremely high in all countries. In all studies, nurses and physicians also report very high levels of exposure. Workers in government and private community service agencies, banks and other institutions serving the public are frequently confronted by attacks from individuals who have been kept waiting unduly, have been greeted with disinterest and indifference (whether real or perceived), or were thwarted in obtaining the information or services they desired because of complicated bureaucratic procedures or technicalities that made them ineligible. Clerks in retail establishments receiving items being returned, workers staffing airport ticket counters when flights are overbooked, delayed or cancelled, urban bus or trolley drivers and conductors, and others who must deal with customers or clients whose wants cannot immediately be satisfied are often targets for verbal and sometimes even physical abuse. Then, there are also those who must contend with impatient and unruly crowds, such as police officers, security guards, ticket takers and ushers at popular sporting and entertainment events.

Post-traumatic stress disorder is characterized by features that include episodes of repeated reliving of the trauma in intrusive memories (“flashbacks”), dreams or nightmares, occurring against the persisting background of a sense of “numbness” and emotional blunting, detachment from other people, unresponsiveness to surroundings, anhedonia, and avoidance of activities and situations reminiscent of the trauma. There is usually a state of autonomic hyperarousal with hypervigilance, an enhanced startle reaction, and insomnia. Anxiety and depression are commonly associated with the above symptoms and signs, and suicidal ideation is not infrequent. In a small proportion of cases the condition may follow a chronic course over many years, with eventual transition to an enduring personality change.

#### **2.4.2. “Psychosomatic psychiatric syndromes caused by mobbing” as a new item**

Mobbing, literally meaning “to form a crowd around someone in order to attack him/her”, defines the behaviour of some animal species of assailing one member of the group, who, for various reasons, is to be expelled. “Workplace mobbing” is defined as “a malicious attempt to force a person out of the workplace through unjustified accusations, humiliation, general harassment, emotional abuse, and/or terror”. This item has been taken into consideration by the WHO and by the European Parliament. In different countries other terms have been adopted to indicate similar behaviour in the workplace such as bullying, work or employee abuse, mistreatment, emotional abuse, bossing, victimization, intimidation, psychological terrorization, psychological violence, moral harassment and psychological harassment. Any occupational setting could present a risk of mobbing. A victim of mobbing could present a complex psychosomatic and psychiatric syndrome from severe emotional reactions such as fear, anxiety and helplessness, to depression. These feelings may manifest themselves in a range of social and psychosomatic conditions including: the loss of morale, social isolation and maladjustment, feelings of professional incompetence and powerlessness, psychosomatic illness, extreme and irrational fear of returning to work or performing formerly routine activities, general job dissatisfaction and reduction in organisational commitment. In extreme cases, the consequent disintegration in a victim’s personality may undermine their confidence in their abilities to such an extent that they are reduced to a state of voluntary unemployment. Recognition of mobbing at work is progressing in a number of countries such as Belgium, France, Italy and Sweden.

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**2.4.3. “Any other mental or behavioural disorder not mentioned in preceding items 2.4.1 to 2.4.2 where a link is established between exposure to risk factors arising from work activities and the mental disorder contracted by the worker” as a new item**

This is done for the same reasons as for the modified open item for chemical agents (previous 1.1.32) and for accommodation of the essence of subparagraph (b) of Article 1 of the Protocol of 2002 to the Occupational Safety and Health Convention, 1981 (No. 155), which states that the term “occupational disease” covers any disease contracted as a result of an exposure to risk factors arising from work activity.

### **3. Occupational cancer**

#### **3.1. Cancer caused by the following agents**

##### **3.1.4. “Chromium VI and chromium VI compounds” as a modified item of the previous 3.1.4**

This proposal is to ensure consistency with the IARC classification that evaluated only hexavalent chromium as carcinogenic to humans (Group 1).

##### **3.1.15. “Arsenic and its compounds” as a new item**

Arsenic is a silver-grey metalloid, which has a garlic odour. It oxidizes easily in damp air, the surface becoming covered with a layer of arsenic trioxide. Inorganic compounds include arsine ( $\text{AsH}_3$ ), arsenic trioxide ( $\text{As}_2\text{O}_3$ ), cupric arsenite ( $\text{Cu}(\text{AsO}_2)_2$ ), sodium arsenite ( $\text{NaAsO}_2$ ), lead arsenate ( $\text{Pb}_3(\text{AsO}_4)_2$ ), and arsenic pentoxide ( $\text{As}_2\text{O}_5$ ). Main occupational uses and sources of exposure include the manufacture and use of insecticides (now less common), herbicides and fungicides; pigments industry; in alloys with other metals (e.g. Pb); Cu, Pb, Zn, Co refining (present as an impurity); tanning; glassmaking; electronics industry; arsenic extraction from minerals, etc. Arsenic and arsenic compounds are classified by IARC as carcinogenic to humans (Group 1). Occupational exposure to inorganic arsenic, especially in mining and copper smelting, has quite consistently been associated with an increased risk of cancer. An almost ten-fold increase in the incidence of lung cancer was found in workers most heavily exposed to arsenic, and relatively clear dose-response relationships have been obtained with regard to cumulative exposure and especially with 30-day ceiling levels. Studies have shown that some US smelter worker populations have consistent increases in lung cancer incidence, as well as increases of about 20 per cent in the incidence of gastrointestinal cancer and of 30 per cent for renal cancer and haemato-lymphatic malignancies. The increase in the risk of lung cancer has also been confirmed among a population of Swedish smelter workers with a six- to eight-fold risk among roasters. Three studies of two populations of workers in pesticide production showed an increased risk for lung cancer – up to three-fold – and some excess of malignant cancers of the lymphatic and haematopoietic tissues.

This item is recognized in a number of countries. Occupational cancer due to arsenic is actually covered by item 11, “Diseases caused by arsenic or its toxic compounds”, of the list of occupational diseases appended to the Employment Injury Benefits Convention, 1964 (No. 121) since the term “diseases” in this list includes cancer. Arsenic is item 101 of the 2003 European schedule of occupational diseases.

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### **3.1.16. “Beryllium and its compounds” as a new item**

Beryllium is a light, grey hard metal, with chemical properties between those of aluminium and magnesium; its commonest ore is beryl (silicates of aluminium and beryllium). Although only a relatively small number of workers worldwide are potentially exposed to high levels of beryllium, mainly in the refining and machining of metal and in the production of beryllium-containing products, a growing number of workers are potentially exposed to lower levels of beryllium in the aircraft, aerospace, electronics and nuclear industries. Beryllium is also used in lithography for integrated circuits. Beryllium and beryllium compounds are classified by IARC as carcinogenic to humans (Group 1). In an early series of cohort mortality studies of workers at two beryllium extraction, production and fabrication facilities in the United States, a consistent, marginally significant excess of deaths from lung cancer was observed. The excess increased with time from the first exposure. Also, the risk of lung cancer increased over time from the first exposure and was greater in workers first hired in the period when exposure to beryllium in the workplace was relatively uncontrolled.

This item is recognized in a number of countries. Beryllium is item 102 of the 2003 European schedule of occupational diseases.

### **3.1.17. “Cadmium and its compounds” as a new item**

Cadmium is found at low concentrations in the Earth’s crust, mainly as the sulphide in zinc-containing mineral deposits. Since the early twentieth century, it has been produced and used in a variety of applications in alloys and in compounds. Among the important compounds of cadmium are cadmium oxide (used in batteries, as an intermediate and catalyst and in electroplating), cadmium sulphide (used as a pigment), cadmium sulphate (used as an intermediate and in electroplating) and cadmium stearate (used as a plastics stabilizer). Occupational exposure to cadmium and cadmium compounds occurs mainly in the form of airborne dust and fumes. Occupations in which the highest potential exposures occur include cadmium production and refining, nickel-cadmium battery manufacture, cadmium pigment manufacture and formulation, cadmium alloy production, mechanical plating, zinc smelting, soldering and polyvinyl chloride compounding. Cadmium and cadmium compounds are classified by IARC as carcinogenic to humans (Group 1). Early and recent studies provide consistent evidence that there is an increased risk of lung cancer for workers exposed to cadmium.

This item is recognized in a number of countries. Cadmium is item 105 of the 2003 European schedule of occupational diseases.

### **3.1.18. “Erionite” as a new item**

Erionite occurs as a fibrous component of some zeolite deposits in various areas of the world. Erionite fibres have also been identified as a component of soil and building materials in these areas. Occupational exposures occur during mining, milling and processing of some zeolites as well as during agricultural work in areas in which soils are contaminated with erionite. Erionite is classified by IARC as carcinogenic to humans (Group 1). Epidemiological studies have demonstrated very high mortality from malignant mesothelioma, mainly of the pleura.

### **3.1.19. “Ethylene oxides” as a new item**

Ethylene oxide is a colourless liquefied gas with a sweet odour. It is primarily used as a chemical intermediate for ethylene glycol and other chemicals such as non-ionic

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surfactants, glycol ethers, ethanolamines, triethylene glycol, and diethylene glycol. It is used as a sterilant and fumigant in the health product and medical fields.

It has been used in flame-retardants and to accelerate the maturing of tobacco leaves. It is also used as a fumigant in spices, packaged cereals, bagged rice, tobacco, clothing and furs in vaults, and valuable packaged documents; as an agricultural fungicide; and as a rocket propellant. Although small amounts are used in sterilizing medical instruments and supplies in hospitals and industrially and for the fumigation of spices, it is during these uses that the highest occupational exposure levels have been recorded. Ethylene oxide is classified by IARC as carcinogenic to humans (Group 1). In epidemiological studies of exposure to ethylene oxide, the most frequently reported association has been with lymphatic and haematopoietic cancer. Ethylene oxide is classified by the United States Occupational Safety and Health Administration (OSHA) as an occupational carcinogen.

### **3.1.20. “Diseases caused by formaldehyde” as a new item**

Formaldehyde (methanal, formic aldehyde) is a colourless gas, flammable at ambient temperature. Workplace exposure is usually associated with a 30-50 per cent (by weight) aqueous solution (formalin). Exposure to formaldehyde occurs during its production, the synthesis of formol-based plastics, the manufacture of chemical substances, disinfection, and in the textiles industry (dressing of hides and fabrics). It is also released during the combustion of a number of organic materials (incinerators, car exhaust fumes, etc.), and from chipboard made using formaldehyde-based resins.

Formaldehyde causes nasopharyngeal cancer in humans and is a Group 1 carcinogen to humans as classified by IARC. There are reports that formaldehyde exposure causes other cancers and there is evidence linking formaldehyde exposure to leukaemia.

Other health effects include:

- Irritant effects: Formaldehyde is extremely irritant to the skin (skin ulceration can occur), eyes and respiratory tract (acute pulmonary oedema follows intense exposure).
- Allergic effects: Formaldehyde is only rarely responsible for allergic effects. However, because of its irritant effects, it is likely to aggravate any pre-existing asthmatic condition.

This item is included in the 2003 European schedule of occupational diseases and in some national lists (e.g. Algeria, China, Czech Republic, El Salvador, South Africa, Switzerland and United Kingdom).

### **3.1.21. “Hepatitis B virus (HBV) and C virus (HCV)” as a new item**

Hepatitis B and C are similar kinds of liver infection that are caused by viruses. Chronic hepatitis B and C are long-term infections of the liver that develop after a bout of acute hepatitis. Hepatitis B and hepatitis C are spread by contact with infected blood or other body fluids of people who have hepatitis B or C infection. People who may be at risk of contracting hepatitis B or C at work include, but are not limited to: health-care workers, first aid officers and those who handle blood/tissue products, medical practitioners and nursing staff, others who come into contact with used syringes, police and emergency workers.

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Chronic infection with hepatitis B virus and hepatitis C virus are classified by IARC as carcinogenic to humans (Group 1). Many case-control studies have been reported on the association between hepatocellular carcinoma and chronic infection with HBV, as determined by HBsAg seropositivity. Infection with HCV, as indicated by the presence of antibodies to HCV in serum, has been associated with an increased risk of hepatocellular carcinoma.

Viral hepatitis was already included as item 404 of the 2003 European schedule of occupational diseases.

### **3.1.22. “Silica” as a new item**

Silica occurs as a natural component of many materials used or encountered in construction activities. Crystalline silica is present in substantial quantities in sand, sandstone and granite, and often forms a significant proportion of clay, shale and slate. It can also be found in chalk, limestone and other rock and soil, though this is unusual. Products such as concrete and mortar also contain crystalline silica.

The health hazards of silica come from breathing in the dust. Activities which can expose workers to the dust include stone masonry, facade renovation, blast cleaning of buildings, especially using sand, many demolition processes, concrete scabbling, cutting or drilling and tunnelling. The use of power tools to cut or dress stone will lead to high exposure throughout the work. For other activities, exposure will often depend upon how confined the working space is, the presence or absence of ventilation and how near the worker’s breathing zone is to the source of the dust. Tunnelling through dry, silica-bearing rock will always lead to high exposure for workers at or near the cutting face.

Crystalline silica inhaled in the form of quartz or cristobalite from occupational sources is classified by IARC as carcinogenic to humans (Group 1). Lung cancer has been associated with occupational exposure to quartz dust. Diseases including cancer due to exposure to silica are recognized in a number of countries.

### **3.1.23. “Cancer caused by any other agents not mentioned in the preceding items 3.1.1 to 3.1.22 where a link is established between exposure to these agents arising from work activity and the disease contracted by the worker” as a modified item of the previous 3.1.15**

This is done for the same reasons as for the modified open item for chemical agents (previous 1.1.32) and for accommodation of the essence of subparagraph (b) of Article 1 of the Protocol of 2002 to the Occupational Safety and Health Convention, 1981 (No. 155), which states that the term “occupational disease” covers any disease contracted as a result of an exposure to risk factors arising from work activity.