

Chapter 2.4 Self-assessment exercises

Last updated version 15/11/2012

The following questions are for self-assessment and they are at the same time examples of what the final assessment will look like. Multiple choice questions with four possible answers are provided; there is only ONE correct answer.

Question 1: Identify physical hazards in the workplace.

Watch the following film and identify the physical hazards to which a welder is exposed.

Identify the physical occupational hazards to which the welder is exposed:

- A: noise, sun radiation and vibrations;
- B: biological agents, chemicals, non-ergonomic posture and physical hazards;
- C: infrared radiation, visible radiation, noise;
- D: the welder has no exposure to physical occupational hazards because he wears protective equipment: welding mask and gloves.

Question 2: We have an interventional cardiologist for his periodical medical examination. He is exposed to ionizing radiation (X-ray radiation). Which investigations should be performed in the medical examination?

- A: pulmonary standard radiogram, ECG, audiogram;
- B: blood count examination, micro nucleoli test, reticulocyte count, ophthalmological examination;
- C: liver tests, kidney tests, haemoleucogram;
- D: EEG, psychological examination, vertebral radiogram.

Question 3: George is a 30 year-old butcher. He works in a refrigerating room, cutting the meat. The room's temperature is in between 0-4°C. The illuminating conditions are appropriate (650-700 lx). He works for 8 hours per day in a standing position, performing repetitive movements. He takes breaks: 10 minutes every 2 hours and a lunch break of 30 minutes. He works with special cutting knives and as individual protective equipment, he wears special warm clothes and shoes and a special metal glove. He has been working here for 7 years. He complains of pain in the lumbar region and dysuria. Do you think that his complains are related to the workplace and the professional activity?

Question 4: Jack is a 25 year-old construction worker. Nowadays, he works at the construction of the European highway E101. He works from 7 a.m. to 5 p.m. but most of the days, including the week-end, he works up to 7 p.m. He started working here 3 months ago (i.e. in May). His professional activity consists of drilling, spreading the materials, supervising the mechanized activities, supervising the traffic on the road. What kind of protective equipment should Jack wear under these circumstances and what other protective measurements should be applied in his case?

References

1. International Labour Office (ILO). Encyclopedia.vol.II
2. World Health Organization (WHO). The global burden of disease: 2004 update. Geneva: WHO:2008.
3. Fundamental Principles of Occupational Health and Safety, Benjamin O.Alli, International Labour Office, Geneva, 2001
http://www.who.int/healthinfo/global_burden_disease/global_health_risks/en/index.html
4. European Foundation for the Improvement of Living and Working Conditions (Eurofound). Changes over time – First findings from the fifth European Working Conditions Survey. Dublin, 2010.
<http://www.eurofound.europa.eu/surveys/ewcs/2010/index.htm>
<http://www.eurofound.europa.eu/surveys/smt/ewcs/results.htm>
5. Directive 2006/25/EC- artificial optical radiation
6. [Directive 2004/40/EC - electromagnetic fields and waves](#)
7. [Directive 2003/10/EC - noise](#)
8. [Directive 2002/44/EC - vibration](#)
9. [Directive 96/29/Euratom - ionizing radiation](#)
10. [Directive 2009/71/Euratom - nuclear safety](#)
11. [Directive 2004/108/EC - electromagnetic compatibility](#)
12. [Directive 2003/122/Euratom - radioactive sources](#)
13. [Directive 2000/14/EC - noise - equipment for use outdoors](#)
14. Office for Official Publications of the European Communities, 2009, Information Notices on Occupational Diseases: a guide to diagnosis.
15. Shaian Tamir, Cathira Adelman, Jeffrey M Weinberger, Haim Sohmer, Uniform comparison of several drugs which provide protection from noise induce hearing loss, Journal of Occupational Medicine and toxicology, 2010, 5, 26, doi: 10,1186, 1745-6673-5-26
16. Cocarla Aristotel, Tratat de Medicina Ocupationala, Editura Academiei, 2009
17. Pauncu Elena-Ana, Medicina Muncii teorie si practica, Editura Orizonturi, 2008.
18. ILO. List of occupational diseases (revised 2010). Identification and recognition of occupational diseases: Criteria for incorporating diseases in the ILO list of occupational diseases. Geneva, ILO, 2010 (Occupational Safety and Health Series, no. 74).

Feedback on self-assessment exercises

Question 1. The correct answer is C

Ultraviolet radiation (UV) is generated by the electric arc in the welding process. UV radiation can damage the lens of the eye, and many arc welders have the sensation of sand in the eyes ("arc-eye"). Also, the skin can be damaged by burning or by increasing the skin effects of other chemicals. Infrared radiation (IR) is also produced by the electric arc and other flame cutting equipment and may heat the skin surface and the tissues immediately below the skin surface. The protection from IR (and UV) implies a welder's helmet (or glasses) and protective clothing. In the arc welding process,

the eyes are exposed to intense visible light. This exposure can produce adaptation, pupil reflex, and shading of the eyes. The effects could be prevented by the welder's helmet. All types of welding generate noise which depends on the characteristics of the welding process.

Question 2. The correct answer is B

The exposure to ionizing radiation of the interventional cardiologists is one of the highest exposures of this kind among the medical personnel. The organs with increased radio-sensitivity are the bone marrow (and that is why we have to perform the blood count examination (lymphocytes) and the reticulocyte count), the thymus, the spleen, the lymphatic nodes, the gonads, and the crystalline (that is why we perform the ophthalmological examination).

The micronucleus test is used to strengthen the genotoxicity of various compounds (chemical, biological, and physical – such as ionizing radiation). A micronucleus is the erratic (third) nucleus that is formed during the anaphase of mitosis or meiosis. It is not a very specific test, but it is cheap, relative rapid and simple.

Question 3.

His health problem can be related to the workplace since the low temperature has effect at the level of the kidney and the urinary tract, causing a health problem at this level (usually a urinary tract infection which can lead to other complications at the level of the kidney, if not treated correctly).

Question 4.

Because of exposure to UV radiation, proper clothing to cover the skin but which lets the skin breathe, is necessary. On the uncovered surfaces, it is necessary to apply SPF cream. For the eyes, sunglasses with UV block are necessary. He should wear a sun hat to protect his head from the sun. Also, every hour, he should take a 5-10 minutes break, sit in a colder place and he should drink a sufficient quantity of water.

Documentation

International

1. International Labour Office (ILO) www.ilo.org
2. World Health Organization (WHO). www.who.int - www.who.dk/(WHO Europe)
3. WHO. Workers' Health : global plan of action. WHA60.26, Sixtieth World Health Assembly 2007 (In English, French and Spanish)
4. European Agency for Safety and Health at Work. <http://osha.europa.eu/en/about>
5. International Commission on Occupational Health (ICOH). www.icohweb.org
6. HSE: Health and Safety Executive of the United Kingdom <http://www.hse.gov.uk>
7. FIOH : Finnish Institute of Occupational Health
<http://www.ttl.fi/Internet/English/default.htm>
8. INRS: Institut National de Recherche et de Sécurité France <http://www.inrs.fr>
9. IARC : International agency for Research on Cancer <http://www.iarc.fr/>
10. Canadian Centre for Occupational Health and Safety <http://www.ccohs.ca>
11. CDC : Centers of disease control and prevention <http://www.cdc.gov/>

12. NIOSH: National Institute for Occupational Safety and Health <http://www.cdc.gov/niosh>
Office for Official Publications of the European Communities, 2009,

National: Romania

1. Work protection www.protectiamuncii.ro
2. Legislation for work and safety www.securitatea-muncii.ro
3. Romtens Foundation www.romtens.ro
4. Romanian Society of Occupational Medicine www.srmedicina-muncii.ro

Available on the website of the EMUTOM Module

1. <http://www.eurofound.europa.eu/publications/htmlfiles/ef1074.htm> = first findings EWCS 2010 <http://www.eurofound.europa.eu/pubdocs/2010/74/en/3/EF1074EN.pdf> = Resume in English (8 pages) also available in French, Dutch, Romanian, Spanish
2. International Labour Office (ILO) : List of occupational diseases(revised 2010)
http://www.ilo.org/wcmsp5/groups/public/---ed_protect/---protrav/---safework/documents/publication/wcms_125137.pdf = in English
http://www.ilo.org/safework/info/publications/lang--en/contLang--fr/docName--WCMS_125160/index.htm = in French