Ninth Meeting of the Emergency Preparedness and Response Standards Committee (EPReSC)
VIC, M Building-Press Room
3-5 December 2019, Vienna, Austria

ILO Activities on prevention of major industrial accidents and radiation protection of workers

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The ILO is a *triptite* organization with worker and employer representatives taking part in its work on equal status with those of governments.

The number of the ILO member countries now stands at 187.

In 1969 the ILO was awarded the Nobel Peace Prize.
Standard-setting is one of the ILO’s major means of action to improve conditions of life and work worldwide.

ILO standards are **Conventions** and **Recommendations** adopted by the International Labour Conference.
Between 1919 and 2019, 190 Conventions, 6 protocols and 206 Recommendations were adopted.

Many of these instruments relate to occupational safety and health.
NORMLEX is a new information system which brings together information on International Labour Standards (such as ratification information, reporting requirements, comments of the ILO’s supervisory bodies, etc.) as well as national labour and social security laws.

NORMLEX has been designed to provide comprehensive and user friendly information on these topics and includes the NATLEX database as well as the information which was previously contained in the former APPLIS, ILOLEX and Libsynd databases.

**As of Today 28 Nov. 2019**

- ILO member States: 187
- ILO instruments adopted: 402
  - Conventions: 190
  - Protocols: 6
  - Recommendations: 206

**Latest Ratifications**

**November 2019**

- Côte d’Ivoire - C170 - Chemicals Convention, 1990 (No. 170) - 01 Nov 2019
- Côte d’Ivoire - P029 - Protocol of 2014 to the Forced Labour Convention, 1930 - 01 Nov 2019
- Malawi - C155 - Occupational Safety and Health Convention, 1981 (No. 155) - 07 Nov 2019
Conventions and Recommendations

Occupational Safety and Health
- C155 Occupational Safety and Health Convention, 1981
- R164 Occupational Safety and Health Recommendation, 1981
- R197 Promotional Framework for Occupational Safety and Health Recommendation, 2006

Occupational Health Services
- C161 Occupational Health Services Convention, 1985
- R171 Occupational Health Services Recommendation, 1985
Major Hazard Control

- C174 Prevention of Major Industrial Accidents Convention, 1993
- R181 Prevention of Major Industrial Accidents Recommendation, 1993

Working Environment

- C148 Working Environment (Air Pollution, Noise and Vibration) Convention, 1977
- R156 Working Environment (Air Pollution, Noise and Vibration) Recommendation, 1977
Conventions and Recommendations

Toxic Substances and Agents

- R3 Anthrax Prevention Recommendation, 1919
- C13 White Lead (Painting) Convention, 1921
- C115 Radiation Protection Convention, 1960
- R114 Radiation Protection Recommendation, 1960
- C136 Benzene Convention, 1971
- R144 Benzene Recommendation, 1971
- C162 Asbestos Convention, 1986
- R172 Asbestos Recommendation, 1986
- C170 Chemicals Convention, 1990
- R177 Chemicals Recommendation, 1990
Conventions and Recommendations

Occupational Cancer
- C139 Occupational Cancer Convention, 1974
- R147 Occupational Cancer Recommendation, 1974

Guarding of Machinery
- C119 Guarding of Machinery Convention, 1963
- R118 Guarding of Machinery Recommendation, 1963

Maximum Weight
- C127 Maximum Weight Convention, 1967
- R128 Maximum Weight Recommendation, 1967
Particular Branches of Activity

- C164 Health Protection and Medical Care (Seafarers) Convention, 1987
- C120 Hygiene (Commerce and Offices) Convention, 1964
- C27 Marking of Weight (Packages Transported by Vessels) Convention, 1929
- R106 Medical Advice at Sea Recommendation, 1958
- C113 Medical Examination (Fishermen) Convention, 1959
- C73 Medical Examination (Seafarers) Convention, 1946
- C152 Occupational Safety and Health (Dock Work) Convention, 1979
- R160 Occupational Safety and Health (Dock Work) Recommendation, 1979
- C110 Plantations Convention, 1958
- C134 Prevention of Accidents (Seafarers) Convention, 1970
- R142 Prevention of Accidents (Seafarers) Recommendation, 1970
- C28 (Shelved) Protection against Accidents (Dockers) Convention, 1929
- C32 Protection against Accidents (Dockers) Convention (Revised), 1932
- C184 Safety and Health in Agriculture Convention, 2001
- R192 Safety and Health in Agriculture Recommendation, 2001
- C167 Safety and Health in Construction Convention, 1988
- R175 Safety and Health in Construction Recommendation, 1988
- C176 Safety and Health in Mines Convention, 1995
- R183 Safety and Health in Mines Recommendation, 1995
- C62 Safety Provisions (Building) Convention, 1937
- R53 Safety Provisions (Building) Recommendation, 1937
- R105 Ships' Medicine Chests Recommendation, 1958
- R194 List of Occupational Diseases Recommendation, 2002
Conventions and Recommendations

Employment of Women
- C3 Maternity Protection Convention, 1919
- C103 Maternity Protection Convention (Revised), 1952
- C183 Maternity Protection Convention, 2000
- R191 Maternity Protection Recommendation, 2000
- C89 Night Work (Women) Convention (Revised), 1948
- P89 Protocol of 1990 to the Night Work (Women) Convention (Revised), 1948
- C45 Underground Work (Women) Convention, 1935

Employment of Children and Young Persons
- C77 Medical Examination of Young Persons (Industry) Convention, 1946
- C78 Medical Examination of Young Persons (Non-Industrial Occupations) Convention, 1946
- C16 Medical Examination of Young Persons (Sea) Convention, 1921
- C124 Medical Examination of Young Persons (Underground Work) Convention, 1965
- C138 Minimum Age Convention, 1973
- C10 Minimum Age (Agriculture) Convention, 1921
- C7 Minimum Age (Sea) Convention, 1920
- C90 Night Work of Young Persons (Industry) Convention (Revised), 1948
- C79 Night Work of Young Persons (Non-Industrial Occupations) Convention, 1946
- C182 Worst Forms of Child Labour Convention, 1999
- R190 Worst Forms of Child Labour Recommendation, 1999

Migrant Workers
- C143 Migrant Workers (Supplementary Provisions) Convention, 1975
Labour Inspection

- C81 Labour Inspection Convention, 1947
- R81 Labour Inspection Recommendation, 1947
- P81 Protocol of 1995 to the Labour Inspection Convention, 1947
- C129 Labour Inspection (Agriculture) Convention, 1969
- R133 Labour Inspection (Agriculture) Recommendation, 1969
- C178 Labour Inspection (Seafarers) Convention, 1996
- R185 Labour Inspection (Seafarers) Recommendation, 1996
Causes of Industrial Accidents

Human failures or errors. Human error and unsafe behaviour accounts for almost 90% of all accidents.

Technical faults (Manufacture defects in equipment or material, improper maintenance procedures, lack of preventive maintenance programs, etc)

External forces
The founders of the ILO identified these humane working conditions as: the regulation of the hours of work, including the establishment of a maximum working day and week, ... the provision of an adequate living wage, the protection of the worker against sickness, disease and injury arising out of his employment, the protection of children, young persons and women, provision for old age and injury, protection of the interests of workers when employed in countries other than their own, recognition of the principle of equal remuneration for work of equal value, recognition of the principle of freedom of association ... 40

Ensuring that all workers are afforded these protections creates a level playing field.

We recommend the establishment of a Universal Labour Guarantee that includes:

(a) fundamental workers’ rights: freedom of association and the effective recognition of the right to collective bargaining and freedom from forced labour, child labour and discrimination; and

(b) a set of basic working conditions: (i) “adequate living wage” 41, (ii) limits on hours of work 42 and (iii) safe and healthy workplaces 43

The international community has long recognized health as a human right 44. But in a world where almost 3 million workers continue to die every year as a result of occupational accidents and work-related diseases 45, it is time for safety and health at work to be recognized as a fundamental principle and right at work.
(xvi) deepening and scaling up its work on international labour migration in response to constituents’ needs and taking a leadership role in decent work in labour migration; and

(xvii) intensifying engagement and cooperation within the multilateral system with a view to strengthening policy coherence, in line with the recognition that:

- decent work is key to sustainable development, addressing income inequality and ending poverty, paying special attention to areas affected by conflict, disaster and other humanitarian emergencies; and

- in conditions of globalization, the failure of any country to adopt humane conditions of labour is more than ever an obstacle to progress in all other countries.

B. Social dialogue, including collective bargaining and tripartite cooperation, provides an essential foundation of all ILO action and contributes to successful policy and decision-making in its member States.

C. Effective workplace cooperation is a tool to help ensure safe and productive workplaces, in such a way that it respects collective bargaining and its outcomes, and does not undermine the role of trade unions.

D. Safe and healthy working conditions are fundamental to decent work.

III

The Conference calls upon all Members, taking into account national circumstances, to work individually and collectively, on the basis of tripartism and social dialogue, and with the support of the ILO, to further develop its human-centred approach to the future of work by:

A. Strengthening the capacities of all people to benefit from the opportunities of a changing world of work through:

(i) the effective realization of gender equality in opportunities and treatment;

(ii) effective lifelong learning and quality education for all;

(iii) universal access to comprehensive and sustainable social protection; and
On September 25th 2015, countries adopted a set of goals to **end poverty, protect the planet, and ensure prosperity for all** as part of a new sustainable development agenda. Each goal has specific targets to be achieved over the next 15 years.
Convention (No. 174) and Recommendation (No. R181) concerning the Prevention of Major Industrial Accidents

Adopted in June 1993 at the 80th Session of the International Labour Conference
C. 174 applies to **applies to major hazard installations**.

This Convention does not apply to:

a) nuclear installations and plants processing radioactive substances except for facilities handling non-radioactive substances at these installations;

b) military installations;

c) transport outside the site of an installation other than by pipeline.

This Convention provides that each Member of the ILO shall formulate, implement and periodically review a coherent national policy concerning the protection of workers, the public and the environment against the risk of major accidents. This policy shall be implemented through preventive and protective measures for major hazard installations and, where practicable, shall promote the use of the best available safety technologies.
Components of a major hazard control system

- Definition and identification of major hazard installations
- Information about the installations
- Assessment of major hazards
- Control of the causes of major industrial accidents
- Safe operation of major hazard installations
- Emergency planning
- Siting and land-use planning
- Inspection of major hazard installations
Responsibilities of employers

- Identification of major hazard installations
- Notification to the Competent Authority about the installations
- Develop and maintain a system of major hazard control
- Safety report & accident reporting
Responsibilities of competent authority

- Off-site emergency preparedness
- Siting of major hazard installations
- Inspection
Rights and duties of workers

- Information
- Consultation
- Training
- Corrective action and interruption of the activity
Responsibility of Exporting States

When, in an exporting member State, the use of hazardous substances, technologies or processes is prohibited as a potential source of a major accident, the information on this prohibition and the reasons for it shall be made available by the exporting member State to any importing country.
Convention (No. 115) and Recommendation (No. 114) concerning the protection of workers against ionizing radiations

Adopted in June 1960 at the 44th Session of the International Labour Conference
C. 115 applies to all activities involving exposure in the course of their work and provides that each Member of the ILO who ratifies it shall give effect to its provisions by means of laws or regulations, codes of practice or other appropriate methods.
Some key requirements:

- **Protective measures** be taken in the light of knowledge available at the time. Article 1
- **Exposure of workers to ionizing radiations** to the lowest practicable level & any unnecessary exposure be avoided. Article 5
- **Dose limits** for various categories of workers be fixed and be kept under constant review in the light of current knowledge. Article 6
- **Dose limits for young workers and worker under 16** be forbidden in work involving ionizing radiations. Article 7
I. General Provisions
3. For the purpose of giving effect to paragraph 2 of Article 3 of the Radiation Protection Convention, 1960, every Member should have due regard to the recommendations made from time to time by the International Commission on Radiological Protection and standards adopted by other competent organizations.

II. Maximum Permissible Levels
4. The levels referred to in Articles 6, 7 and 8 of the Radiation Protection Convention, 1960, should be fixed with due regard to the relevant values recommended from time to time by the International Commission on Radiological Protection. In addition, maximum permissible concentrations of radioactive substances in such air and water as can be taken into the body should be fixed on the basis of these levels.
IV. Methods of Protection
10. Plans should be made in advance for measures--
   (a) to detect as promptly as possible any leakage from, or
   breakage of, a sealed source of radioactive substances which
   may involve a risk of radioactive contamination; and
   (b) to take prompt remedial action to prevent the further
   spread of radioactive contamination and to apply other
   appropriate safety precautions, including decontamination
   procedures, with, as necessary, the immediate collaboration of
   all authorities concerned.

11. Sources which may involve exposure of workers to ionising
    radiations, and the areas in which such an exposure may occur
    or where workers may be exposed to radioactive contamination,
    should be identified, in appropriate cases, by means of easily
    recognisable warnings.
12. All sources of radioactive substances, whether sealed or
    unsealed, in use or stored by an undertaking, should be
    appropriately recorded.
Under Article 19 of the ILO Constitution member States are required to report at appropriate intervals, as requested by the Governing Body, on non-ratified Conventions and on Recommendations, indicating in their reports the extent to which effect has been given or is proposed to be given to those instruments.

Under Article 22, reports are periodically requested from States which have ratified ILO Conventions. The report form to which each State is to conform their reports are approved by the Governing Body. On the right is the approved reporting form for C.115.
On 21 March 2012 the Governing Body of the ILO at its 313th Session authorized the revised BSS to be published as a joint publication.
General Observation of 2015

Developed with the support and collaboration of the IAEA

Adopted by the CEACR in December 2015

- Presentation by the IAEA on radiation protection at the CEACR’s session

Published in February 2016 in the Committee of Experts’ report.
Two parts

- The first part is a summary of the recommendations of the ICRP and the IAEA
- The second part is the CEACR’s conclusions on the measures that should be taken, to give effect to the Convention, in light of these recommendations

A copy of the general observations have been sent to all 50 countries that have ratified the Convention, and they will be asked to provide information on the measures they are taking with respect to the guidance given.
Introduction

- Background,
- Reference to available knowledge – Articles 3(1) and 6(2) of the Convention
- Scope of the concept of occupational exposure

Part I – Overview of the recommendations and norms of the IAEA and the ICRP

- System of protection of workers against ionizing radiations
  - General principles of the system of protection
  - Application of maximum permissible limits within the system of protection against ionizing radiations

- Dose limits in occupational exposure (Limits on intake, Previous recommendations on dose limits, Current recommendations for dose limits)
  - Protection for pregnant and breastfeeding workers
  - Dose limits for persons between 16 and 18 years of age
  - Dose limits for workers not directly engaged in radiation work

- General principles in emergency situations
  - Limitation of occupational exposure during an emergency and
  - Limitation of occupational exposure during the recovery period

- Monitoring of the workplace
- Workers’ health surveillance
- Discontinuation of assignment to work involving exposure to ionizing radiation pursuant to medical advice and alternative employment
- Records of individual doses
Part II – Conclusions

- System of radiation protection
- Current recommendations for dose limits
- Protection for pregnant and breastfeeding workers
- Dose limits for persons between 16 and 18 years
- Dose limits for workers not directly engaged in radiation work
- Limitation of occupational exposure during an emergency
- Monitoring of the workplace
- Workers’ health surveillance
- Discontinuation of assignment to work involving exposure to ionizing radiation pursuant to medical advice and alternative employment
- Records of individual doses
Convention concerning Benefits in the Case of Employment Injury (Entry into force: 28 Jul 1967)
Display in: French - Spanish - Arabic - German - Russian - Chinese

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Preamble

The General Conference of the International Labour Organisation,
Having been convened at Geneva by the Governing Body of the International Labour Office, and having met in its Forty-eighth Session on 17 June 1964, and
Having decided upon the adoption of certain proposals with regard to benefits in the case of industrial accidents and occupational diseases, which is the fifth item on the agenda of the session, and
Having determined that these proposals shall take the form of an international Convention,
adopts this eighth day of July of the year one thousand nine hundred and sixty-four the following Convention, which may be cited as the Employment Injury Benefits Convention, 1964:

Article 1

In this Convention--

(a) the term legislation includes any social security rules as well as laws and regulations;
(b) the term prescribed means determined by or in virtue of national legislation;
(c) the term industrial undertaking includes all undertakings in the following branches of economic activity: mining and quarrying; manufacturing; construction; electricity, gas, water and sanitary services; and transport, storage and communication;
(d) the term dependent refers to a state of dependency which is presumed to exist in prescribed cases;
(e) the term dependent child covers--

(i) a child under school-leaving age or under 15 years of age, whichever is the higher, and
(ii) a child under a prescribed age higher than that specified in subclause (i) and who is an apprentice or student or has a chronic illness or infirmity disabling him for any gainful activity, on conditions laid down by national legislation: Provided that this requirement shall be deemed to be met where national legislation defines the term so as to cover any child under an age appreciably higher than that specified in subclause (i).

Article 2

1. A Member whose economic and medical facilities are insufficiently developed may avail itself of a declaration accompanying its ratification of the temporary exceptions provided for in the following Articles: Article 5, Article 9, paragraph 3, clause (b), Article 12, Article 15, paragraph 2, and Article 18, paragraph 3. Any such declaration shall state the reason for such exceptions.

2. Each Member which has made a declaration under paragraph 1 of this Article shall include in its report upon the application of this Convention submitted under Article 22 of the Constitution of the International Labour Organisation a statement in respect of each exception of which it avails itself--

(a) that its reason for doing so subsists; or
(b) that it renounces its right to avail itself of the exception in question as from a stated date.
Recommendation 194

Recommendation concerning the List of Occupational Diseases and the Recording and Notification of Occupational Accidents and Diseases

The General Conference of the International Labour Organization,

Having been convened at Geneva by the Governing Body of the International Labour Office, and having met in its 90th Session on 3 June 2002, and

Noting the provisions of the Occupational Safety and Health Convention and Recommendation, 1981, and the Occupational Health Services Convention and Recommendation, 1985, and

Noting also the list of occupational diseases as amended in 1980 appended to the Employment Injury Benefits Convention, 1964, and

Having regard to the need to strengthen identification, recording and notification procedures for occupational accidents and diseases, with the aim of identifying their causes, establishing preventive measures, promoting the harmonization of recording and notification systems, and improving the compensation process in the case of occupational accidents and occupational diseases, and

Having regard to the need for a simplified procedure for updating a list of occupational diseases, and

Having decided upon the adoption of certain proposals with regard to the recording and notification of occupational accidents and diseases, and to the regular review and updating of a list of occupational diseases, which is the fifth item on the agenda of the session, and

Having determined that these proposals shall take the form of a Recommendation:

adopts this twentieth day of June of the year two thousand and two the following Recommendation, which may be cited as the List of Occupational Diseases Recommendation, 2002.
R205 - Employment and Decent Work for Peace and Resilience Recommendation, 2017 (No. 205)

Display in: French - Spanish - Arabic - German - Russian - Chinese

Preamble

The General Conference of the International Labour Organization,

Having been convened at Geneva by the Governing Body of the International Labour Office, and having met in its 106th Session on 5 June 2017, and

Reaffirming the principle in the Constitution of the International Labour Organisation (ILO) that universal and lasting peace can be established only if it is based upon social justice, and

Recalling the Declaration of Philadelphia (1944), the Universal Declaration of Human Rights (1948), the ILO Declaration on Fundamental Principles and Rights at Work and its Follow-up (1998) and the ILO Declaration on Social Justice for a Fair Globalization (2008), and

Taking into account the need to revise the Employment (Transition from War to Peace) Recommendation, 1944 (No. 71), with a view to broadening its scope and providing up-to-date guidance on the role of employment and decent work in prevention, recovery, peace and resilience with respect to crisis situations arising from conflicts and disasters, and

Considering the impact and consequences of conflicts and disasters for poverty and development, human rights and dignity, decent work and sustainable enterprises, and

Recognizing the importance of employment and decent work for promoting peace, preventing crisis situations arising from conflicts and disasters, enabling recovery and building resilience, and

Recognizing that the countries receiving refugees may not be in situations of conflicts and disasters, and

Emphasizing the need to ensure respect for all human rights and the rule of law, including respect for fundamental principles and rights at work and for international labour standards, in particular those rights and principles relevant to employment and decent work, and

Considering the need to recognize that crises affect women and men differently, and the critical importance of gender equality and the empowerment of women and girls in promoting peace, preventing crises, enabling recovery and building resilience, and

Recognizing the importance of developing responses, through social dialogue, to crisis situations arising from conflicts and disasters, in consultation with the most representative employers’ and workers’ organizations and, as appropriate, with relevant civil society organizations,
R205 - Employment and Decent Work for Peace and Resilience Recommendation, 2017 (No. 205)

I. Objectives and scope

1. This Recommendation provides guidance to Members on the measures to be taken to generate employment and decent work for the purposes of prevention, recovery, peace and resilience with respect to crisis situations arising from conflicts and disasters.

2. For the purposes of this Recommendation and based upon internationally agreed terminology:

   (a) the term “disaster” means a serious disruption of the functioning of a community or a society at any scale due to hazardous events interacting with conditions of exposure, vulnerability and capacity, leading to one or more of the following: human, material, economic and environmental losses and impacts; and

   (b) the term “resilience” means the ability of a system, community or society exposed to hazards to resist, absorb, accommodate, adapt to, transform and recover from the effects of a hazard in a timely and efficient manner, including through the preservation and restoration of its essential basic structures and functions through risk management.
I. Objectives and scope

3. For the purposes of this Recommendation, the term “crisis response” refers to all measures on employment and decent work taken in response to crisis situations arising from conflicts and disasters.

4. This Recommendation applies to all workers and jobseekers, and to all employers, in all sectors of the economy affected by crisis situations arising from conflicts and disasters.
III. Strategic approaches

9. Crisis response in the immediate aftermath of a conflict or disaster should include, as appropriate:

   (d) safe and decent working conditions, including the provision of personal protective equipment and medical assistance for all workers, including those engaged in rescue and rehabilitation activities;
XII. Prevention, mitigation and preparedness

41. Members should take measures, in particular in countries in which there are foreseeable risks of conflict or disaster, to build resilience, in consultation with employers’ and workers’ organizations and other stakeholders, to prevent, mitigate and prepare for crises in ways that support economic and social development and decent work, through actions such as:

(a) identification of risks and evaluation of threats to and vulnerabilities of human, physical, economic, environmental, institutional and social capital at local, national and regional levels;

(b) risk management, including contingency planning, early warning, risk reduction and emergency response preparedness;

...
XIII. International cooperation

42. In preparing for and responding to crisis situations, Members should strengthen cooperation and take appropriate steps through bilateral or multilateral arrangements, including through the United Nations system, international financial institutions and other regional or international mechanisms of coordinated response. Members should make full use of existing arrangements and established institutions and mechanisms and strengthen them, as appropriate.

43. Crisis responses, including support by regional and international organizations, should provide for a central focus on employment, decent work and sustainable enterprises, and should be consistent with applicable international labour standards.

...  

47. Members should strengthen international cooperation, including through the voluntary and systematic exchange of information, knowledge, good practices and technology for promoting peace, preventing and mitigating crises, enabling recovery and building resilience.

...
International Labour Organization

- Convention (No. 115) and Recommendation (No. 114)
- Code of Practice on Radiation Protection of Workers (Ionizing Radiation)
- Inter-Agency Cooperation
- Employers’ and workers’ participation
Safety Guides on Occupational Radiation Protection

- RS-G-1.1: Occupational Radiation Protection
- RS-G-1.2: Assessment of Occupational Exposure Due to Intakes of Radionuclides
- RS-G-1.3: Assessment of Occupational Exposure Due to External Sources of Radiation
- RS-G-1.6: Occupational Radiation Protection in the Mining and Processing of Raw Materials
- GS-G-3.2: The Management System for Technical Services in Radiation Safety

Years:
- 1999: RS-G-1.1, RS-G-1.2, RS-G-1.3
- 2004: RS-G-1.6
- 2008: GS-G-3.2
International Technical Advisory Group (ITAG) on the IAEA International Report on Fukushima NPP Accident
Fukushima nuclear accidents: Information resources

Following a major 9.0 magnitude earthquake and tsunami which struck north-eastern Japan on 11 March 2011, the Fukushima nuclear power plants have experienced equipment failures which caused a series of explosions, fires, injuries to the plant workers and emergency responders and radiation releases.

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The status of the Fukushima Daiichi Nuclear Power Plant accident and its effects on the safety and health of the workers and the public are regularly updated on-line on the websites of the related national and international nuclear and health authorities and on the website of the operator of the Fukushima nuclear power plant.

List of reliable on line sources for the latest information on the status of nuclear reactors and radioactive releases:

- International Atomic Energy Agency
- World Health Organization (FAQs: Japan nuclear concerns)
- Japan Nuclear and Industrial Safety Agency (national nuclear regulatory authority)
- Japan Atomic Industrial Forum (national nuclear industry forum)
- Tokyo Electric Power Company (operator of the Fukushima nuclear power plant)
- Information on levels of radioactivity (from the Ministry of Education, Culture, Sports, Science and Technology of Japan)
- Location of nuclear power plants in Japan
- Basic design information for boiling water reactors (BWRs)

For more information about ILO’s activities on radiation protection

- Protecting workers against radiation: ILO activities
- Main ILO Instruments and Publications on Radiation Protection
Radiation Safety and Protection of Workers in Nuclear and Radiological Emergency Operations

Workers working in response to the emergency at the site of the Fukushima Daiichi’s nuclear plant are exposed to traditional OSH risks including explosion and fire as well as to radiation. The International Basic Safety Standards for Protection against Ionizing Radiation and for the Safety of Radiation Sources (BSS) provide a worldwide basis for harmonized radiation protection standards that complement the ILO Convention No. 115 and for the protection of workers engaged in nuclear and radiological emergency operations.

Background

The massive earthquake and resulting tsunami on 11 March 2011 that struck the northeast coast of Japan disabled the Fukushima Daiichi nuclear plant. The earthquake triggered the shutdown of the three active reactors at the plant and the subsequent tsunami stopped the plant’s backup diesel generators, causing a station blackout. The subsequent lack of cooling led to explosions and partial meltdowns at the plant facility, with problems at six reactor units and the central spent fuel pool. Radiation releases caused large evacuations, concern over food and water supplies, and the treatment of nuclear and emergency workers.

Risks for the emergency workers

Workers working in response to the emergency at the site of the Fukushima Daiichi’s nuclear plant are exposed to traditional OSH risks including explosion and fire as well as to radiation.

Exposure to ionizing radiation can induce the death of cells on a scale that can be extensive enough to impair the function of the exposed tissue or organ. At whole-body doses approaching 1 Grey (Gy) and above, acute health effects such as acute radiation syndrome may develop. The effect is more severe for a higher dose.

Exposure to moderate levels can result in radiation sickness, which produces a range of symptoms. Nausea and vomiting often begin within hours of exposure, followed by diarrhea, headaches and fever.

After the first round of symptoms, there may be a brief period with no apparent illness, but this may be followed within weeks by new, more serious symptoms.

At higher levels of radiation, all of these symptoms may be immediately apparent, along with widespread and potentially fatal damage to internal organs. Exposure to a radiation dose of 4 Gy will typically kill about half of all healthy adults.

Exposure to radiation can also induce the non-lethal transformation of cells, which may still retain their capacity for cell division. The human body’s immune system is very effective in detecting and destroying abnormal cells. However, there is a possibility that the non-lethal transformation of a cell could lead, after a latency period, to cancer in the individual exposed, if it is a somatic cell, or may lead to hereditary effects, if it is a germ cell. Such effects are assumed to be proportional to the dose received and have no threshold. The "doubling-adjusted nominal risk coefficient of dose", which includes the risks of all cancers and hereditary effects, is 5% per sievert (Sv).

Prevention and protection measures for emergency workers

The International Basic Safety Standards for Protection against Ionizing Radiation and for the Safety of Radiation Sources (BSS) - [pdf 3478 KB] - were formally published in 1996, and are jointly developed and sponsored by the Food and Agriculture Organization of the United Nations (FAO), the IAEA, the ILO, the Nuclear Energy Agency of the Organization for Economic Co-operation and Development (OECD-NEA), the Pan American Health Organization (PAHO), and the World Health Organization (WHO). The BSS provide a worldwide basis for harmonized radiation protection standards that complement the ILO Convention No. 115. As to the protection of workers engaged in nuclear and radiological emergency operations, the BSS stipulate:

V.21. No worker undertaking an intervention shall be exposed in excess of the maximum single year dose limit for occupational exposure specified in Schedule II, except:

(a) for the purpose of saving life or preventing serious injury;

(b) if undertaking actions intended to avert a large collective dose; or

(c) if undertaking actions to prevent the development of catastrophic conditions.

When undertaking intervention under these circumstances, all reasonable efforts shall be made to keep doses to workers below those for the maximum single year dose limit, except for life saving actions, in which every effort shall be made to keep doses below ten times the maximum single year dose limit in order to avoid deterministic effects on health. In addition, workers undertaking actions in which these doses may approach or exceed ten times the maximum single year dose limit shall do so only when the benefits to others clearly outweigh their own risk.

V.28. Workers who undertake actions in which the dose may exceed the maximum single year dose limit shall be volunteered and shall be clearly and comprehensively informed in advance of the associated health risk, and shall, to the extent feasible, be trained in the actions that may be required.

V.29. The legal person responsible for ensuring compliance with the foregoing requirements shall be specified in emergency plans.
Radiation protection of workers
SafeWork Information Note Series, Information Note No. 1

**Type**
Publication

**Date issued**
2011

**Reference**
978-92-2-124957-3 (web) (ISEN)

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**Unit responsible**
Programme on Safety and Health at Work and the Environment (SAFEWORK)

**Subjects**
hazardous work, occupational safety and health

**Download**
English - pdf 5434 KB

The purpose of this Information note is to provide information about the size of the workforce affected by, and the occupational activities associated with, exposure to radiation and the relevant ILO instruments on the protection of workers.
Practical Guides and Manuals
IAEA Nuclear Energy Series
No. NP-T-3.3

Industrial Safety Guidelines for Nuclear Facilities

Basic Principles

Objectives

Guides

Technical Reports

Jointly sponsored by

IAEA
Globally Harmonized System for Classification and Labelling of Chemicals

Danger
Self-heating; may catch fire

Warning
Self-heating in large quantities; may catch fire
### Toluene

**ICSC:** 0078

<table>
<thead>
<tr>
<th>CAS #</th>
<th>108-88-3</th>
</tr>
</thead>
<tbody>
<tr>
<td>RTECS #</td>
<td>XS5250000</td>
</tr>
<tr>
<td>ICSC #</td>
<td>0078</td>
</tr>
<tr>
<td>UN #</td>
<td>1294</td>
</tr>
<tr>
<td>EC #</td>
<td>601-021-00-3</td>
</tr>
</tbody>
</table>

**Methylbenzene**

**Toluel**

**C₆H₅CH₃**

**Molecular mass:** 92.1

**Types of Hazard/Exposure**

<table>
<thead>
<tr>
<th>Conditions</th>
<th>Symptom/Prevention/Fire Fighting</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>FIRE</strong></td>
<td>Highly flammable. NO open flames, NO sparks, and NO smoking. Powder, AFFF, foam, carbon dioxide.</td>
</tr>
<tr>
<td><strong>EXPLOSION</strong></td>
<td>Vapour/air mixture explosive.</td>
</tr>
</tbody>
</table>

### Nitrobenzene

**ICSC:** 0065

<table>
<thead>
<tr>
<th>CAS #</th>
<th>98-95-3</th>
</tr>
</thead>
<tbody>
<tr>
<td>RTECS #</td>
<td>DA6475000</td>
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<tr>
<td>ICSC #</td>
<td>0065</td>
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<tr>
<td>UN #</td>
<td>1662</td>
</tr>
<tr>
<td>EC #</td>
<td>609-003-00-7</td>
</tr>
</tbody>
</table>

**Nitrobenzol**

**C₆H₅NO₂**

**Molecular mass:** 123.1

**Types of Hazard/Exposure**

<table>
<thead>
<tr>
<th>Conditions</th>
<th>Symptom/Prevention/Fire Fighting</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>FIRE</strong></td>
<td>Combustible. NO open flames. Powder, water spray, foam, carbon dioxide.</td>
</tr>
<tr>
<td><strong>EXPLOSION</strong></td>
<td>Above 88°C explosive vapour/air mixtures may be formed. Risk of fire and explosion. Above 88°C closed system, ventilation.</td>
</tr>
</tbody>
</table>

**Exposure**

<table>
<thead>
<tr>
<th>Ingestion</th>
<th>Convulsions, blue lips or fingernails, blue skin, diarrhoea, headache, lightheadedness, shortness of breath, cold extremities. Strict hygiene!</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inhalation</td>
<td>Ventilation, local exhaust, or breathing protection.</td>
</tr>
</tbody>
</table>
ILO OSH Information Products

ILO Encyclopedia on OSH
ILO e-OSH
Other ILO OSH information products
OSH Legislation
Exposure limits
Solutions
Tools
OSH Institutions worldwide
e-OSH: Electronic library on occupational safety and health
DVD, 2013 edition. Everything you want to know about safety and health at work in two clicks.

Mutilmeda loot | 19 June 2013
Contact(s) content - safework@ilo.org to order the DVD - pubvente@ilo.org

Reference: 2227-4340[ISSN]

e-OSH gives you quick access to the following content:

- Conventions and recommendations
- Codes of practice
- ILO Encyclopaedia
- International Chemical Safety Cards
- OSH Series (e.g. List of occupational diseases (revised 2010), Radiation protection of workers)
- Reports of the World Day and World Congress on Safety and Health at Work
- Training materials and videos

System requirements:
1. Windows PC (Windows XP and above)
2. DVD Reader
3. Monitor resolution of minimum 1024 x 768
4. Adobe Acrobat Reader
5. Internet browser (Internet Explorer or Firefox or Google Chrome)

Intuitive navigation, user-friendly trilingual interface

See also

- Occupational Safety and Health Thesaurus
- International Hazard Datasheets on Occupations (IHDQ) - [pdf 4681KB]
- CSDCC - archived bibliographic database
MEMORANDUM OF UNDERSTANDING between  
the International Labour Organization and  
the Organisation for Economic Co-operation and Development

Committee on Radiation Protection and Public Health

The NEA's Committee on Radiation Protection and Public Health (CRPH) is a valuable resource for its member countries. The committee is made up of regulators and radiation protection experts, with the broad mission to provide timely identification of new and emerging issues, to analyse their possible implications and to recommend or take action to address these issues to further enhance radiation protection regulation and implementation. The regulatory and operational consensus developed by the CRPH on these emerging issues supports policy and regulation development in Member countries, and disseminates good practice.

The most significant challenge currently facing the radiation protection community is how to better integrate radiation protection within modern concepts of and approaches to risk governance. In response to this issue, the internationally accepted principles of radiation protection, upon which virtually all national legislation is based, are in the process of being reviewed and updated. The CRPH goal is to ensure that consensus on directions for improvement is reached among radiation protection experts from national regulatory authorities, and that this consensus is taken into account during the development of new approaches and international recommendations. This will be the main focus of the committee’s work for the coming years. The CRPH will also actively pursue collaborative efforts to address cross-cutting areas such as stakeholder involvement and environmental protection.

All components of the CRPH Programme of Work (POW) will be orientated to along these lines. The Expert Group on the Evolution of the System of Radiation Protection (ESGPR), the Expert Group on the Process of Stakeholder Involvement (ESGSI), and the Expert Group on Release Options (ESGR0), will focus on developing various aspects of a “modern” system of radiation protection. The Forum on the Radiological Protection of the Environment will address this new area of importance. The Working Party on Nuclear Emergency Matters (WPNEM) will orient its strategy towards the longer term management of contaminated territories, for example the use of (or need for) intervention levels at various stages of a nuclear emergency. The Forum on dose and individual monitoring (FODIM) will orient its strategy towards the need to consider aspects of exposures at nuclear power plants, but will be invited to address the issue of “worker empowerment” in terms of modern views of optimisation of exposures.

Specifically, growing stakeholder involvement in decision-making processes addressing human health and environmental risks, as well as interpretation and application difficulties with the current system of radiation protection, have led to a general review of the foundations of
The IAEA Radiation Safety Standards Committee (RASSC)

The IAEA Emergency Preparedness and Response Standards Committee (EPReSC)
The Inter-Agency Committee on Radiological and Nuclear Emergencies (IACRNE) is the coordination mechanism between relevant international intergovernmental organizations, facilitating and coordinating inter-agency cooperation in the event of related emergencies.

The IACRNE works to develop consistent arrangements for preparedness and response to nuclear or radiological accidents.
International Action Plan for Occupational Radiation Protection

- Developed by IAEA in co-operation with ILO.
- Approved by the IAEA Board of Governors on 8 September 2003.
- Fourteen actions grouped in areas, such as:
  - ILO Convention 115
  - Information exchange
  - Education and awareness
  - Promotion of a holistic approach to workplace safety
  - Protection of pregnant workers
  - Probability of causation
International Conference on Occupational Radiation Protection:
Enhancing the Protection of Workers — Gaps, Challenges and Developments
1-5 December 2014
Vienna, Austria
International Conference on
Global Emergency Preparedness and Response
19 to 23 October 2015
Vienna, Austria
International Symposium on Communicating Nuclear and Radiological Emergencies to the Public
1-5 Oct 2018, Vienna, Austria
ILO policy on the improvement of working conditions and environment

- Work should take place in a safe and healthy working environment;
- Conditions of work should be consistent with workers' well-being and human dignity;
- Work should offer real possibilities for personal achievement, self-fulfilment and service to society.
Basic Principles in Occupational Safety and Health

- Responsibilities of the employer
- Role of the competent authority
- Basic workers' rights
Ways forward

- **Vision Zero Fund**
  - G20 Leaders' Declaration (Hamburg, Germany, July 2017): we welcome the Vision Zero Fund for to prevent work-place related deaths and injuries and encourage enterprises and others to join.

- **Global coalition on safety and health at work**
  - Collection of reliable OSH data
  - Mechanisms for exchange of the data
  - Improving OSH in global supply chains
  - Global database on knowledge and expertise
  - Fostering proactive OSH compliance strategies at national level.

- **ILO’s Safety + Health for All Flagship Programme to foster a global culture of prevention and to achieve real reductions of work-related death, injury and diseases.**
Thank you!