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Occupational health and safety strategy in Poland

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Outline

- Data on working conditions in Poland
- National Programme „Improvement of safety and working conditions”
  - Objectives and scientific results
  - Examples of dissemination and implementation of results
  - Measuring impact and progress towards objectives
- Conclusions
National institutions dealing with OSH in Poland

- PARLIAMENT
- COUNCIL OF LABOUR PROTECTION
- NATIONAL LABOUR INSPECTORATE
- CIOP PIB
- MINISTER OF LABOUR AND SOCIAL POLICY
- SOCIAL INSURANCE INSTITUTION
- MINISTER OF SCIENCE AND HIGHER EDUCATION
- INSTITUTES OF OCCUPATIONAL MEDICINE
- CHIEF SANITARY INSPECTION
- MINISTER OF HEALTH
OUR MISSION

- to conduct scientific research aimed at new technological and organizational solutions which are useful in the design of working conditions that conform to OSH and ergonomics requirements

- to determine scientific foundations for the development of socio-economic policies of Poland in the field of OSH.
7 research departments

- Vibroacoustic Hazards
- Safety Engineering
- Bioelectromagnetic Hazards
- Chemical, Aerosol and Biological Hazards
- Ergonomics
- Personal Protective Equipment
- OSH Management
Offices of the Members of OSH expert network and Regional OSH consulting centres certified by CIOP-PIB
Workers employed in hazardous conditions and recognized occupational diseases in Poland in 1987 – 2012 (per 100,000 persons in employment)
Number of severe and fatal work accidents in Poland in 2004 – 2013

- Number of fatal work accidents
- Number of severe work accidents

Source: CIOP-PIB according to data from GUS
* preliminary data
Subjective assessment of workers’ exposure to particular hazardous factors

Proportion of workers in hazardous environmental conditions
Comparison of questionnaire data and experimental data (acc. to CIOP-PIB) and statistical data (Z-10)

National programme

“Improvement of safety and working conditions”

Phase I: 2008 – 2010
Phase II: 2011 – 2013
Established by: The Council of Ministers

Proposer: Minister of Labour and Social Policy

Cooperation in research and development: Minister of Science and Higher Education

Main performer and coordinator: Central Institute for Labour Protection – National Research Institute
The Programme is realized with the participation of:

1. State administration
2. Supervision and control bodies
3. Social partners
4. Scientific and research community
Objectives and results of the National OSH Programme
1) fulfillment of basic requirements included in legal regulations on occupational safety and health adapted to the European Union provisions,
INTERDEPARTMENTAL COMMISSION
FOR MAXIMUM ADMISSIBLE CONCENTRATIONS
AND INTENSITIES OF AGENTS HARMFUL TO HEALTH
IN THE WORKING ENVIRONMENT (CIOP-PIB)

APPOINTMENT OF THE COMMISSION
(REGULATION OF THE COUNCIL OF MINISTERS OF 28 MAY 1996)

DOCUMENTATION OF ADMISSIBLE VALUES

REGULATION
OF THE MINISTER OF LABOUR AND SOCIAL POLICY

STATE SANITARY INSPECTION
NATIONAL LABOUR INSPECTION
OSH SERVICES
TECHNICAL SERVICES
OCCUPATIONAL MEDICINE SERVICES
Determination of maximum admissible concentrations (MACs) of harmful to health chemical agents and dusts in the working environment in Poland (currently 543 values were established), EU, USA and Germany.
OSH-related standards developed by Technical Committees acting in OSH area at CIOP-PIB

<table>
<thead>
<tr>
<th>Description</th>
<th>Till 2013</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Methods for testing chemical substances at the workplace</td>
<td>422</td>
</tr>
<tr>
<td>2. Testing methods concerning acoustics and vibration</td>
<td>98</td>
</tr>
<tr>
<td>3. Requirements concerning processes, machines and devices</td>
<td>56</td>
</tr>
<tr>
<td>4. Ergonomic requirements</td>
<td>91</td>
</tr>
<tr>
<td>5. Requirements and methods for testing PPE</td>
<td>261</td>
</tr>
<tr>
<td>6. Occupational safety and health management</td>
<td>2</td>
</tr>
<tr>
<td>7. Methods for testing optical radiation</td>
<td>4</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>934</strong></td>
</tr>
</tbody>
</table>
Acreditation within the conformity assessment system at CIOP-PIB

- Accreditation for product certification body (since 1994)
- Accreditation of testing laboratory (since 1995)
- Accreditation for management systems certification body (since 2000)
- Accreditation for personnel’s competence certification body (since 2000)
- Accreditation of calibration laboratory (since 2004)

number of accredited laboratories - 16
number of accredited testing procedures - 254
2) provision of special protection for persons working in high-risk economy sectors
Technical solutions
Novel equipment protecting against thermal risks

Active cooling system

Cooling level automatically adjusted to the worker’s individual needs and temperature of the working environment

Interference filter coating for eye protection

High level of effective blockage of harmful infrared radiation with a low level of heating during the exposure to infrared radiation
Emission of nanoobjects during mixing powder of nanomaterial (Halloysite Nanoclay)

Increase of concentration during mixing compared to background
- Number concentration: 289%
- Surface concentration: 190%

Size distribution of particles

Results of analysis of air sample taking during mixing of nanopowder:
- SEM: nanosized tubes of Halloysite Nanoclay – agglomerates
- EDS: „Al”, and „Si” were found typical for nanoclay
Assessment of electromagnetic hazards in the proximity of physiotherapeutic devices and radiophones

- **Exposure** from physiotherapeutic devices and radiophones were assessed on the base of:
  - electromagnetic fields measurements
  - contact and induced currents in phantoms measurements
  - numerical simulations

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**Reduction of exposure effects in the head**
(the ratio of SAR when radiophone @ 5 cm from the head to SAR @ 10 cm)

<table>
<thead>
<tr>
<th>Relative SAR_{10g} values</th>
<th>Conventional system</th>
<th>Trunked system</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ear position</td>
<td>4.0</td>
<td>3.5</td>
</tr>
<tr>
<td>Face position</td>
<td>4.0</td>
<td>3.5</td>
</tr>
</tbody>
</table>

**Radiophone system and position**
Intelligent PPE system for personnel in high-risk and complex environments

Mining and chemical rescue actions, and fire brigades

Environmental and physiological sensors

Visualisation of parameters

Coordination centre
Active hearing protector (type: AOS-2)

Basic technical parameters:
- active reduction rate 20-600 Hz
- active reduction level ca. 10 dB

Efficiency of active noise reduction of AOS-2

- Active attenuation
- Passive attenuation

Frequency [Hz]

Attenuation [dB]
Assessment model of combined influence of whole-body and hand-arm vibration in the working environment

\[ E_{\text{total}} = \sum E_i \]

KD: index for the total assessment of combined vibroacoustic hazards

Certain part of vibroacoustic energy (E) influencing the driver is not taken into account when individual factors are estimated separately.
Applications of virtual reality technology
RECONSTRUCTION OF ACCIDENTS AT WORK

Digital models for numerical reconstructions of accidents at work

Calculation of acceleration of the head as function of falling time
Interactive training system based on Virtual Reality technology (training of miners on how to perform dangerous tasks in coal mines)

- Virtual drill
- Avatar's hands
- Wireless VR gloves
- Wireless image receiver
- Work area image displayed in HMD
Computer games using virtual reality technology support and make the rehabilitation of upper limbs more attractive.
3) increasing the employee and society awareness about cost-effectiveness of preventive measures at national and enterprise level
Implementation of OSH MS contributes significantly to the development of direct participation

Solving OSH-related issues by groups of employees
- With OSH MS: 91%
- Without OSH MS: 29%

Reporting OSH-related issues through representatives
- With OSH MS: 91%
- Without OSH MS: 52%

Reporting OSH-related issues in writing
- With OSH MS: 76%
- Without OSH MS: 38%

Discussing OSH-related issues with management at regular meetings
- With OSH MS: 79%
- Without OSH MS: 38%

Discussing OSH-related issues with immediate manager
- With OSH MS: 79%
- Without OSH MS: 57%
Disability and family pensions and benefits (direct costs) paid out by the Social Insurance Institution due to occupational accidents and diseases, and accidents on the way to and from work cost ~1.6 billion USD (direct costs)

Indirect costs are 3–4 times higher and cost 5.0–6.6 billion USD (~1.0–1.3% of total GDP)
Our Institute elaborated the model of accident insurance premium taking into account the risk index for an activity and for a company, i.e.:

The number of

- occupational accidents (total)
- fatal and serious occupational accidents
- workers exposed to harmful working conditions
Risk categories and insurance premium rates in Poland (2013)

- Coal mining and quarrying: 3.86%
- Forestry: 3.60%
- Production of metal: 2.80%
- Manufacture of wood and products of wood and cork: 2.53%
- Fishing: 1.47%
- Human health and social work activities: 1.20%
- Public administration and defence; education: 0.93%
- Financial and insurance activities: 0.67%
Differentiation of insurance premium rate of enterprises in relation to accidents at work and number of people exposed to hazards

- 3 categories 20%
- 6 categories 50%
+ 3 categories 20%
+ 6 categories 50%

Industry branch average

2003 2006 2009
4) Shaping the high level of safety culture among the employers and employees by developing the system of education and information on OSH requirements.
Working conditions and safety culture

**Psychosocial working conditions:**
- Requirements
- Control
- Support

**Personality:**
- Neurotic
- Extroverted
- Open to experience
- Amicable
- Diligent

**Safety culture in an enterprise – organisation level**

**Employee safety culture – individual level (pro- and antisocial behaviours and attitudes, accident rate)**
Behavior modification programme, including temperamental features of drivers

As a result of the programme, aggressive attitudes were reduced statistically significantly, and the rate of pro-social attitudes on the road improved.

*Wilcoxon significance test (p<0.001; Z=-4.18)
** Wilcoxon significance test (p<0.001; Z=3.97)
Dissemination of the results
Centre for Education (2013)

Number of participants of various forms of education

Total – 2388

Of which:

- Post-graduate studies : 109 (two- and three-semester studies)
- Other training courses : 2279
Distance learning
Education in the *LearningSpace* system
Multimedia educational materials for universities, secondary schools and preschools.
Centre for Personnel’s Competence Certification
Publishing activity
continuous publications
POSTERS:

Occupational risk

Author: Svein Erik Okstad

Author: Aleksandra Łowicka-...
Art competitions

14 local art competitions for children – over 20 thousand participants
Over 3,930,000 users of information in 2013
Development of the web portal

Number of visits at www.ciop.pl in 2003-2013

Visits: 9,09 mln
Downloads: 37,4 mln
Measuring impact of Programme results
1st main indicator:

Impact of the Programme results on improving working conditions up 30% of the working population (2008-2015)

- Estimated no. of employees influenced by Programme results disseminated through the Internet (ca. 0.7 mln)
- Estimated no. of employees affected by the Programme (2.2 mln till 2013)
- Total no. of employees influenced by Programme results (ca. 3 mln till 2015)
- Employed persons (10.2 mln)
- Employees, self-employed, owners, etc. (ca. 14 mln)
2nd main indicator:
Decreasing by at least 25% the financial burden of the General Social Insurance Fund (FUS) related to direct expenditures from Accident Insurance Fund (FW)

\[
\text{FW/FUS} = \frac{3.23 - 2.43}{3.23} \times 100\% = 25\%
\]

Expected decrease in 5 yrs after termination of the 2nd phase of the programme

Source: ZUS
3rd main indicator:

Reduction by at least 1% per year of total social costs of accidents at work and occupational diseases

Social costs of occupational accidents and diseases (in bilion PLN)

|------|------|------|------|------|------|------|------|------|------|------|

II Phase

Prediction on the basis of trend in 2009-2012
QUO VADIS?
21st CENTURY

New tendencies

- Transfer from the manufacturing society to the consumption and/or information society
- increased individualism at work and the related changes in work relations
- the emergence of new, complex types of risk, such as occupational stress, mobbing.
Organizational changes on the job market

- part-time work
- limited-duration contracts
- telework
- computerized supervision
- knowledge-based management
- multi-directional competences
- an increasing number of SMEs
"Ideal state"

4. final institutional and individual order
3. order in the area of behaviour and feeling of safety
2. legislative-political and/or organizational order
1. technical-scientific order

"Unacceptable state"
CONCLUSION

1. Poland, as a member of the European Community since 2004, has harmonised its OSH legal regulations and practices with those of the Community. This applies to all working conditions in order to prevent accidents and occupational diseases and also to meet the requirements of ergonomics.
2. The execution of the National OSH Programme and dissemination of its results is crucial for,

a) Reducing by 30% the number of workers exposed to risk (dangerous and harmful factors)

b) Reducing by at least 25% the financial burden of the Social Insurance Fund

c) Reducing by at least 1% per year the total social cost of work accidents, and occupational diseases
3. The new EU strategy on OSH, according to the Europe 2020 strategy, is aimed at developing solutions:

a) Essential for recognizing and protecting workers from new hazards

b) Making easier for employers to meet OSH requirements, incl. information materials, databases, and interactive tools.
Thank you for your attention