In 2018, Poland is celebrating the 100th anniversary of *independence*.

The Jubilee has historically been an occasion for Poles to bond, despite the dynamically changing personal views – a characteristic of a democratic society.

Implementation of the 4th phase of the National Programme on OSH

Improvement of Safety and Working Conditions

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Director
Central Institute for Labour Protection – National Research Institute
(CIOP-PIB)

Polish-German OSH Dialogue 2018
Görlitz, 14-15 November 2018

CIOP PIB

Outline

- Data on working conditions
- System of labour protection in Poland
- Research in occupational safety and health (National Programme)
- Conclusions

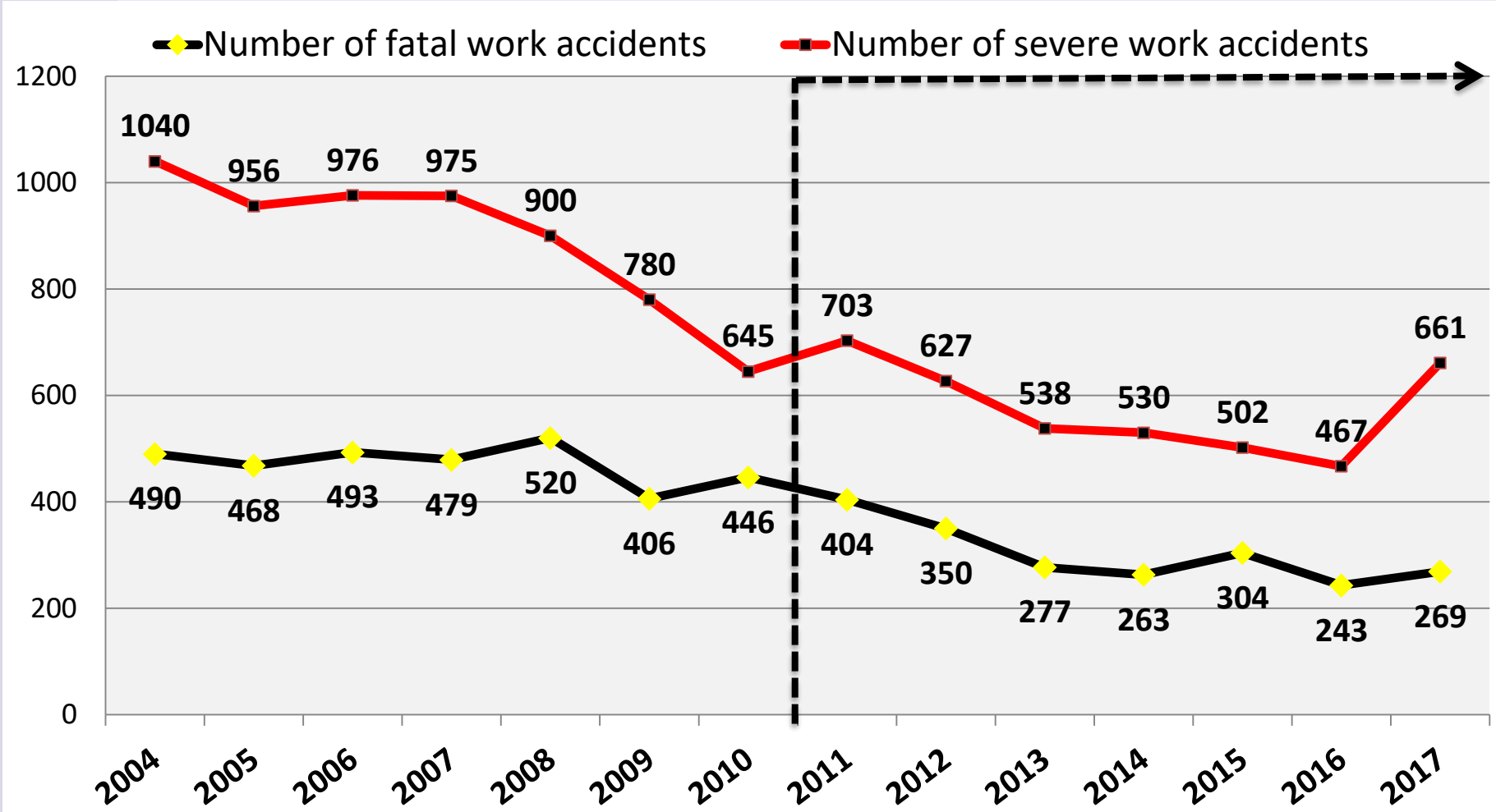
Working conditions in Poland in 2017

88 330 **employees injured in accidents at work, including:**

661 serious accidents

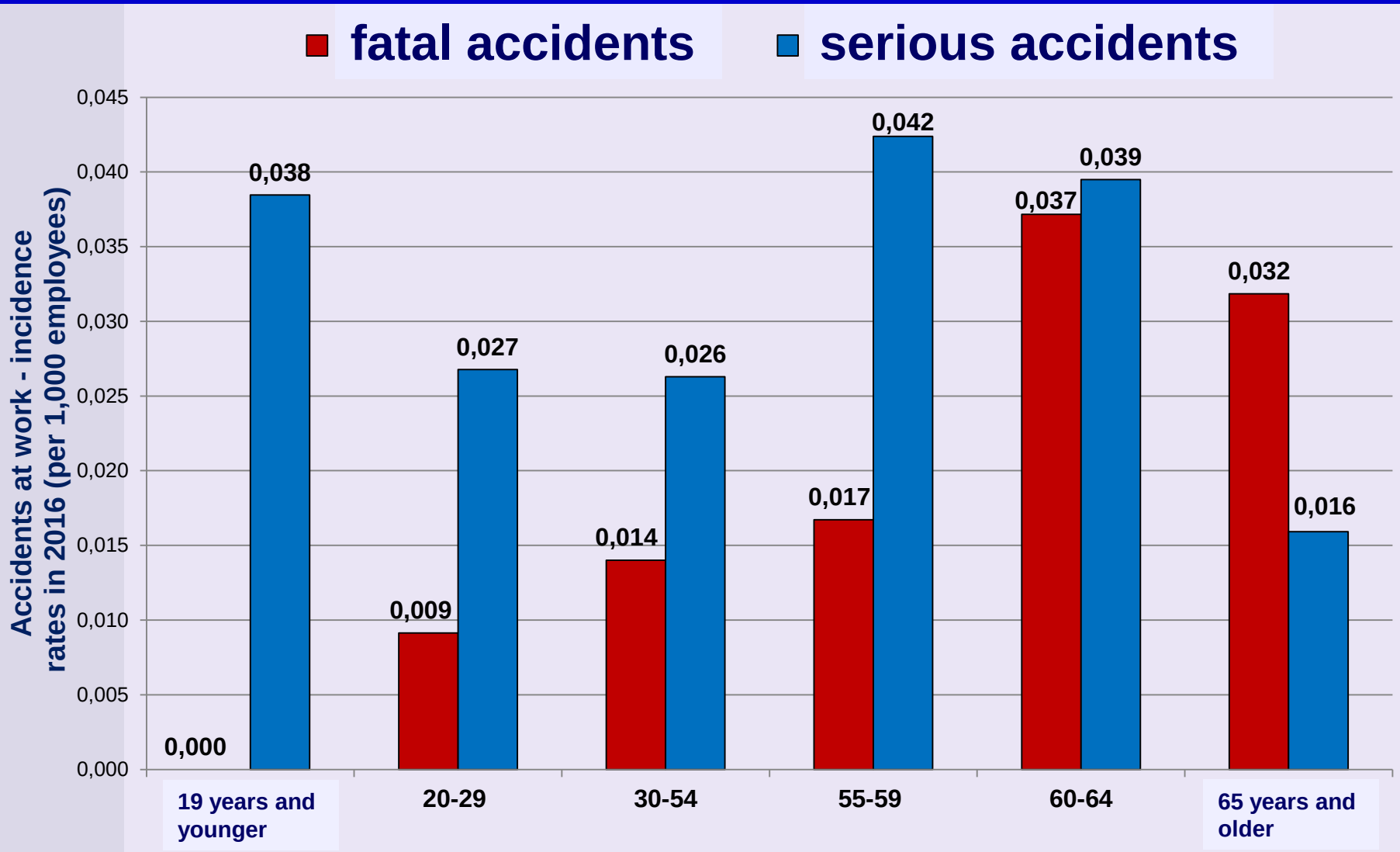
269 fatal accidents

Number of severe and fatal work accidents in Poland in 2004 – 2017



Source: CIOP-PIB according to data from GUS

Accidents at work – incidence rates per 1,000 employees



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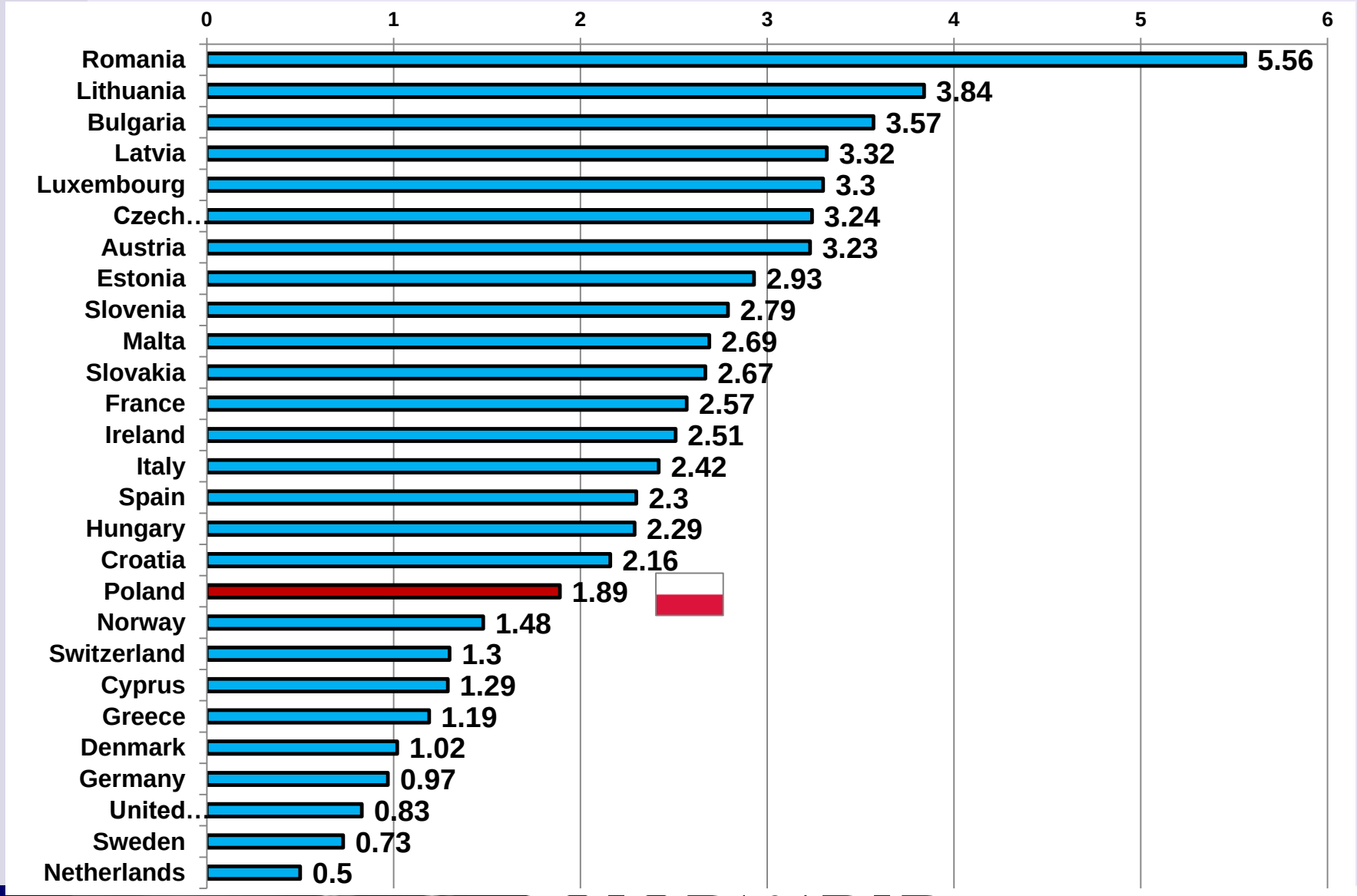
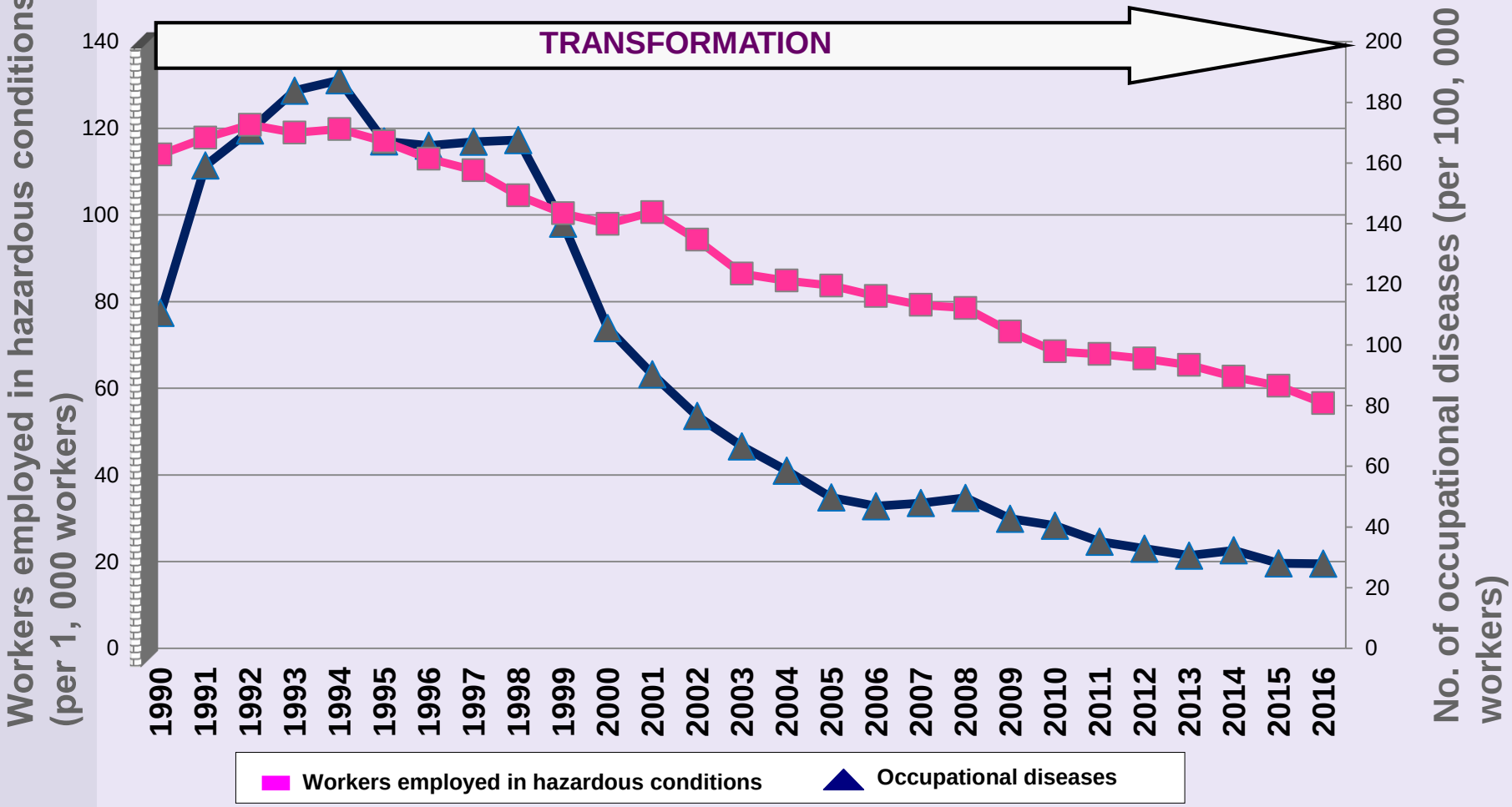
Incident rate of fatal accidents for EU countries (per 100,000 employees) (2015)

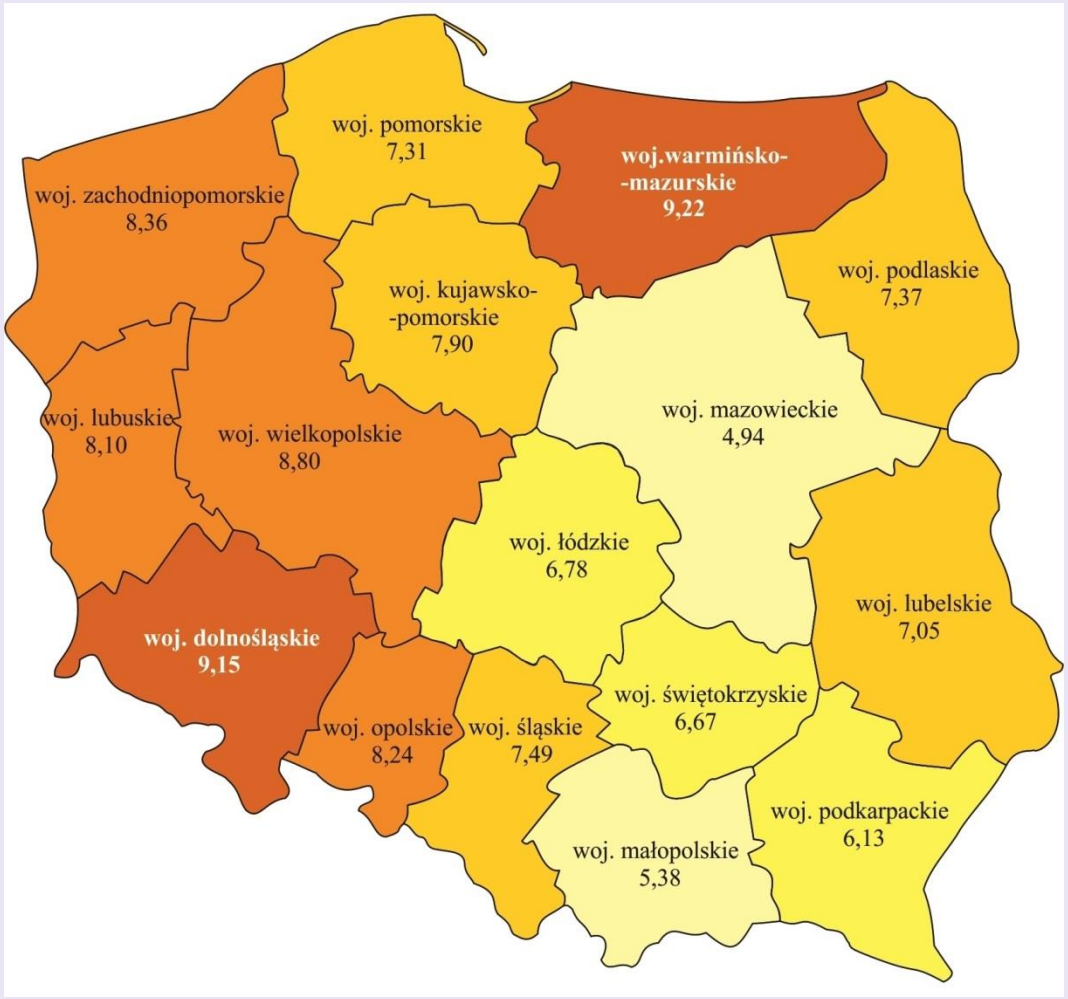


Working conditions in Poland

Workers employed in hazardous conditions and recognized occupational diseases in Poland in 1987 – 2016 (per persons in employment)



Injured in accidents at work per 1,000 employees in Poland without individual farms in agriculture (2016)



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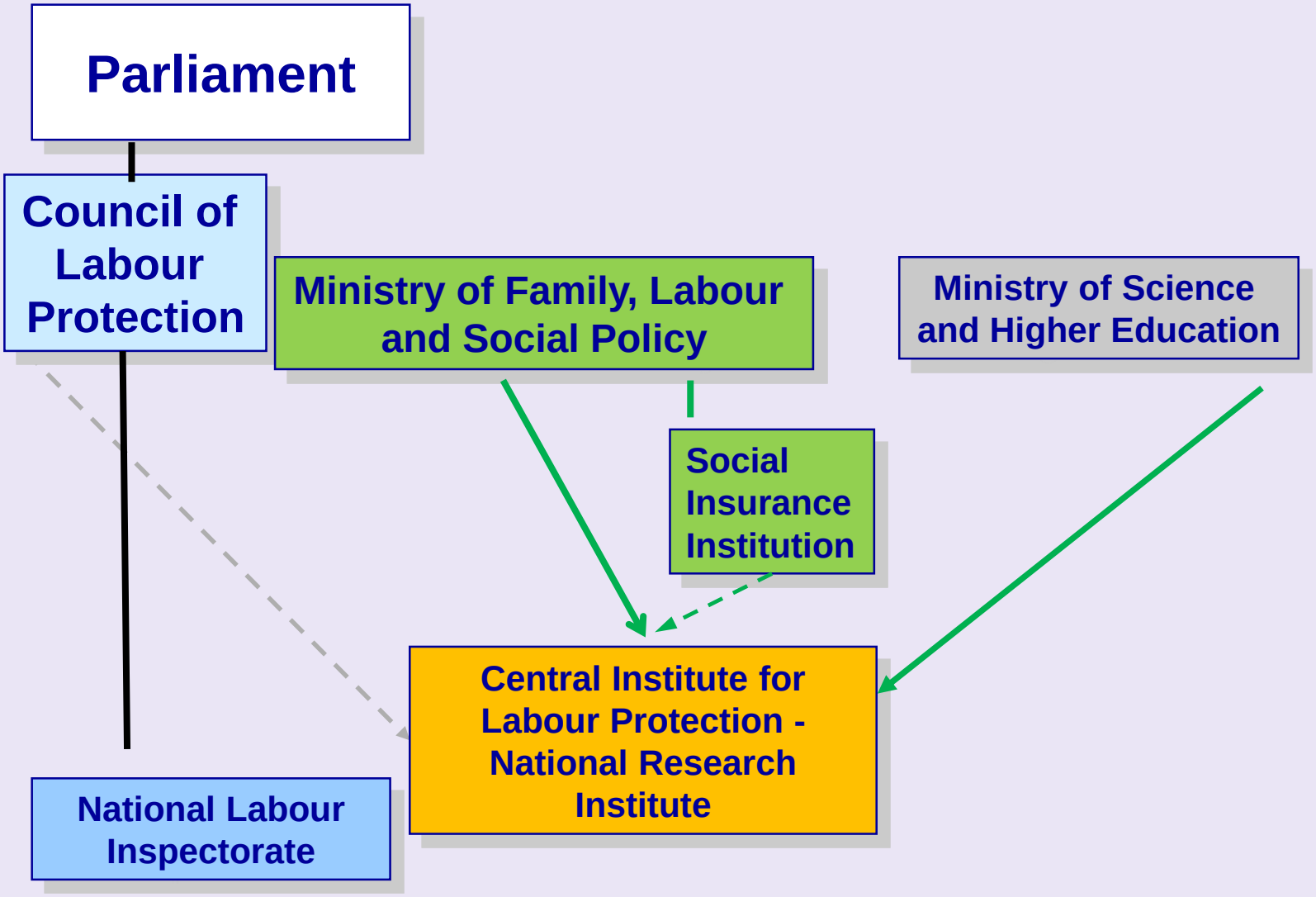
System of labour protection in Poland

The Institute's position in the labour protection system in Poland



OSH supervision and inspection bodies

- National Labour Inspectorate
- State Sanitary Inspection
- Specialist supervision:
  - State Mining Authority
  - Office of Technical Inspection
  - General Office of Building Control

Legal status of the Institute

- The Central Institute for Labour Protection was established by an act of law of 4 April, 1950
- Since 1973 the Institute has functioned under Minister of Labour and Social Policy
- In 2002 the Institute was granted the status of a National Research Institute (Resolution of the Council of Ministers of 5 November 2002)

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New laboratories of CIOP-PIB

7 Research Departments

Vibroacoustic Hazards

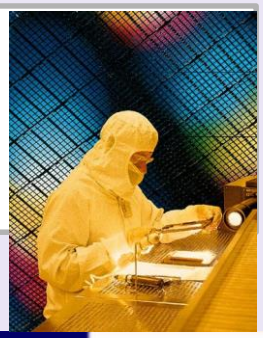
Safety Engineering

Chemical, Aerosol and Biological Hazards

Ergonomics

Bioelectro-magnetic Hazards

Personal Protective Equipment



OSH Management

Main areas of activity

~70% • Research and development

~30%
- Standardization
- Testing and certification of products, management systems and persons' competence
- Training and education
- Computer programmes and databases
- Publications

Central Institute for Labour Protection - National Research Institute was classified as a top category A scientific research institution

National Programme

Improvement of Safety and Working Conditions

CIOP PIB

The National Programme takes account of the thematic areas proposed by the various ministries, the inspection bodies for working conditions and representative employers' and workers' organisations.

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

Main objective

The main objective of the programme is to develop innovative technical and organisational solutions, aimed at developing human resources, new products, technologies, management techniques and systems, which will help to reduce the number of workers exposed to harmful, dangerous and difficult factors, and reduce the number of work-related accidents, occupational diseases and consequent economic and social losses.

Strategic objectives:

- Reducing the number of workers employed in hazardous conditions by **30%** (resulting in longer occupational activity)
- Reducing the burden of the Social Insurance Fund (ZUS) by **at least 25 %** (lower expenses from the Accident Insurance Fund)
- Reducing total social costs of accidents at work by **at least 1%** per year (savings of ca. 350 million PLN per year)

Tasks related to the services of the state

Group 1.
Establishing OSH standards

Group 2.
Developing methods and tools for the prevention and reduction of occupational risk in the workplace

Group 3.
Developing a system to test machinery, technical equipment, and tools as well as personal and collective protective equipment

Group 4.
Developing a system for OSH education, information and promotion.

Budget of the Ministry of Family, Labour and Social Policy: 14,380,146 euro

Research and development tasks

Area I
Maintaining work ability

Area II
New and emerging risks related to new technologies and work processes

Area III
Materials engineering and advanced technologies for health and safety at work

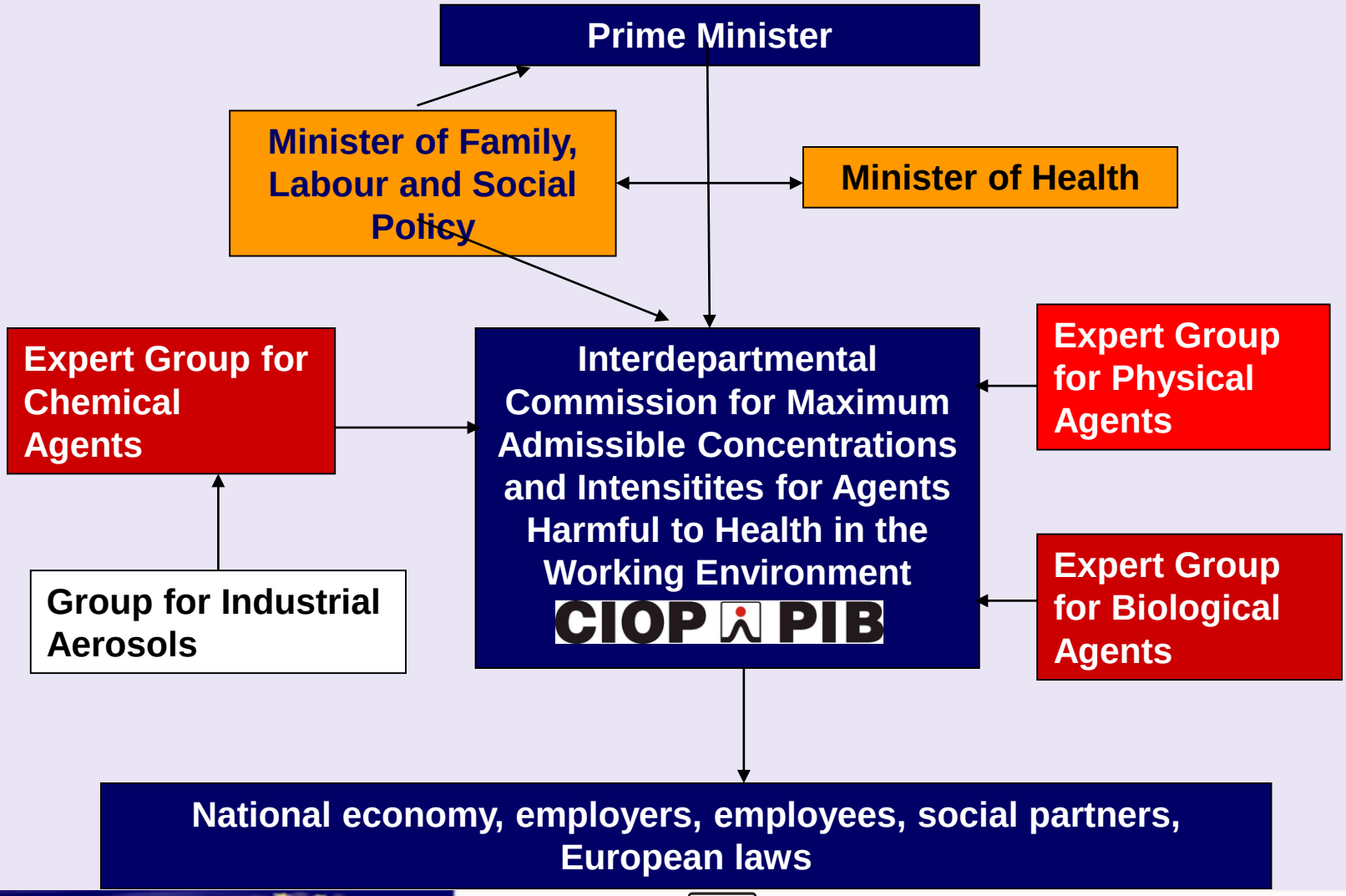
Area IV
Developing a safety culture

Budget of the Ministry of Science and Higher Education: 730,604 euro

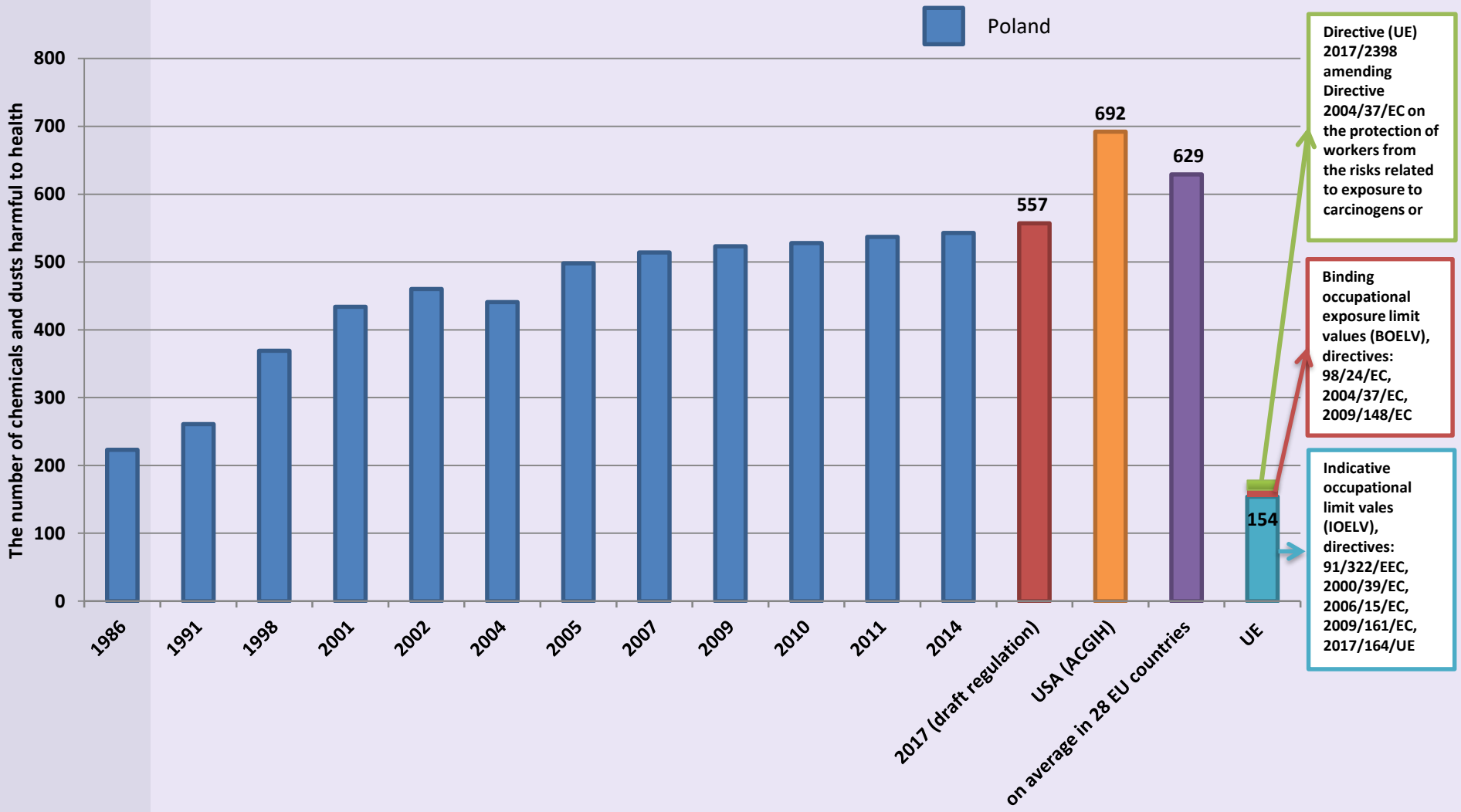
Specific objectives of the Programme

1) **fulfilment of basic requirements included in legal regulations on occupational safety and health adapted to the European Union provisions,**

Setting and review of maximum admissible concentration (MAC) levels of harmful agents in the working environment in Poland



Establishing and verification of maximum admissible concentrations of harmful to health agents in the working environment in Poland (31.01.2018)



The number of current standards developed untill 2015 by technical committees acting at CIOP-PIB

Technical Committee	Number of standards
TC no. 21 for Personal Protective Equipment	**173**
TC no. 157 for Physical Hazards in Work Environment	**68**
TC no. 158 for Safety of Machinery and Technical Equipment and Ergonomics - General Problems	**48**
TC no. 159 for Chemical and Aerosol Hazards in Working Environment	**314**
TC no. 276 for Occupational Safety and Hygiene Management	**4**
TC no. 305 For Social Responsibility	**1**
Total	**608**

The number of standards not translated into the Polish language developed by technical committees at CIOP-PIB	**206**

CIOP-PIB accreditation for testing and certification

No.	Accredited area	Since	Accreditation no.
1.	Testing laboratories	1995	AB 038
2.	Calibration laboratories	2004	AP 061
3.	Certification of products (machinery, personal and collective protective equipment)	1994	AC 018
4.	Certification of OSH management systems	2000	AC 069
5.	Certification of person's competences	2000	AC 071

Regulations issued in Poland thanks to the results of the National Programme 2017 - 2019

1. Regulation of the Minister of Development and Finance of 15 December 2017 on the safety and health at work in the use of powered industrial trucks (Dz. U., poz. 47)

2. Regulation of the Minister of Family, Labour and Social Policy of 12 June 2018 maximum admissible concentrations and intensities of agents harmful to health in the working environment (Dz. U., poz. 1286)

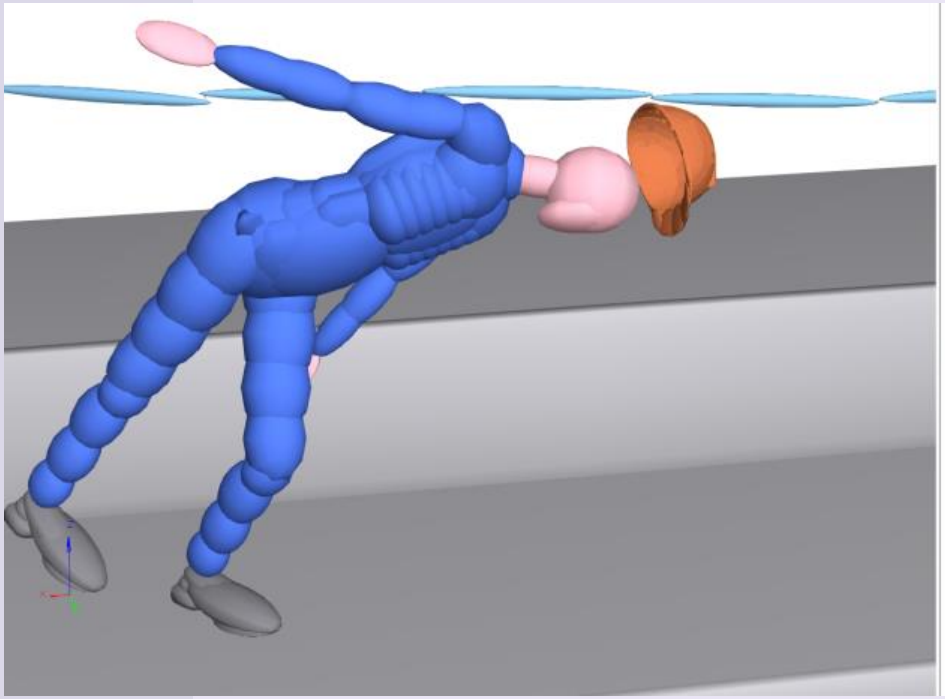
Regulations issued in Poland thanks to the results of the National Programme 2017 - 2019

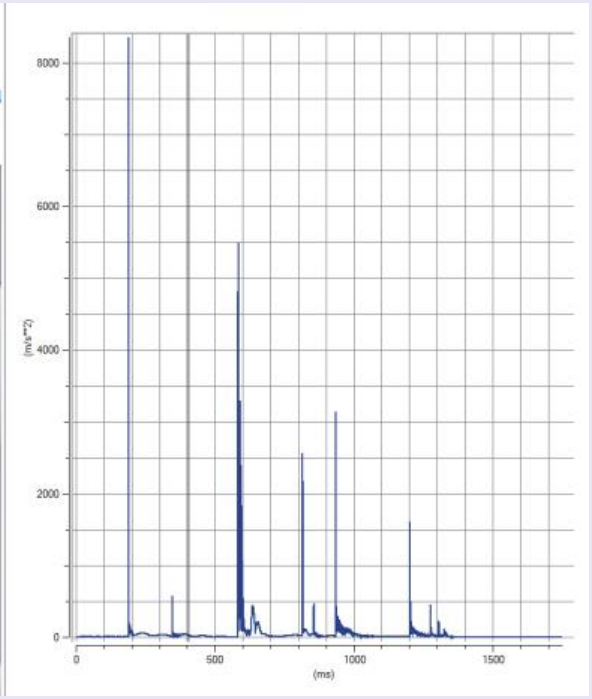
3. Regulation of the Minister of Family, Labour and Social Policy **of 25 April 2017 amending the Regulation** on health and safety at work in manual handling operations **(Dz. U. poz. 854).**
4. Regulation of the Minister of Family, Labour and Social Policy **of 23 December 2016 amending the Regulation** on health and safety at work related to exposure to electromagnetic fields **(Dz. U. poz. 2284 and 2017 poz. 1276)**

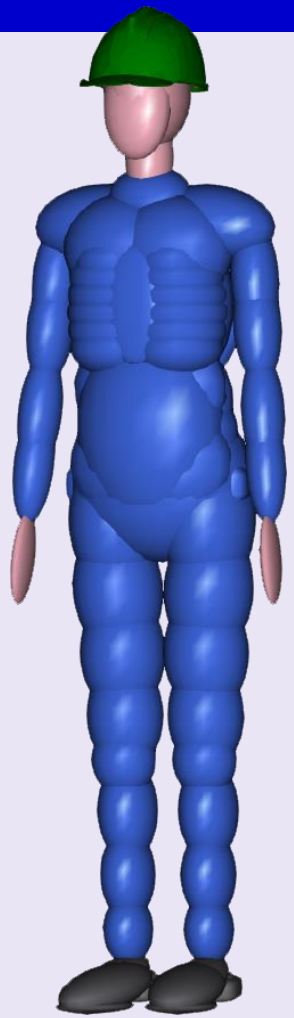
2) provision of special protection for persons working in high-risk economy sectors

Technical solutions
(examples)

RECONSTRUCTION OF ACCIDENTS AT WORK



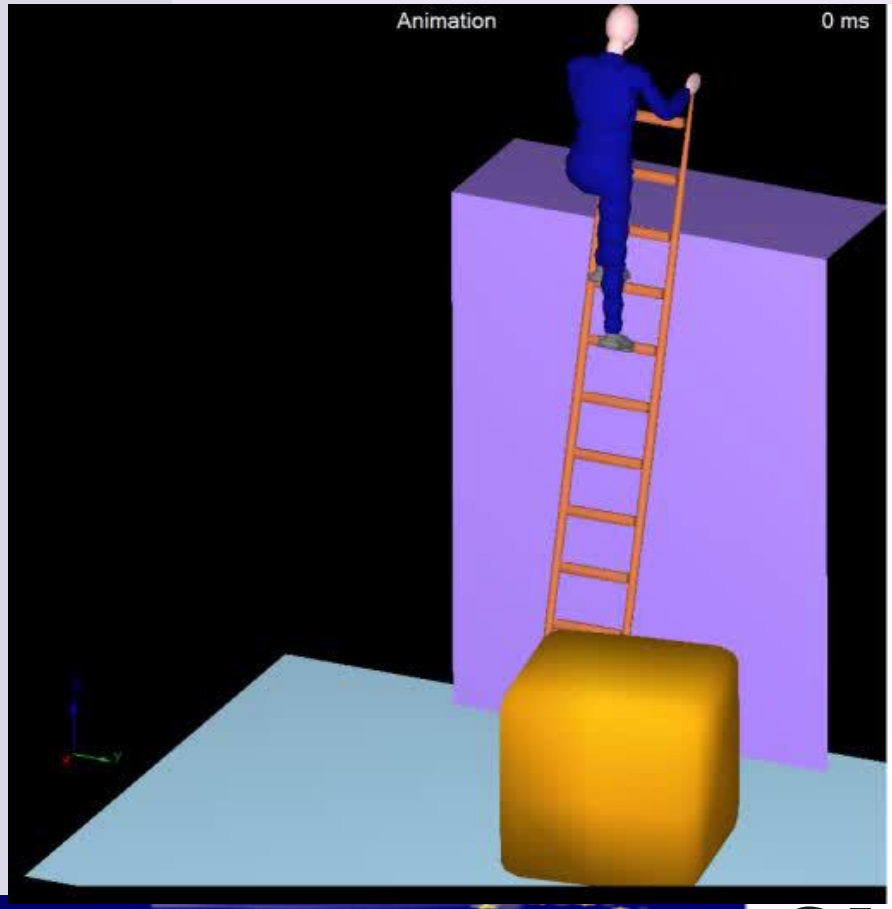


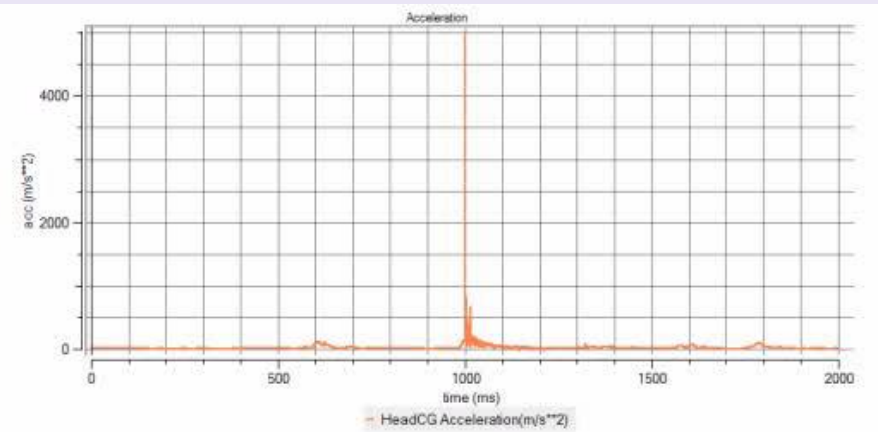


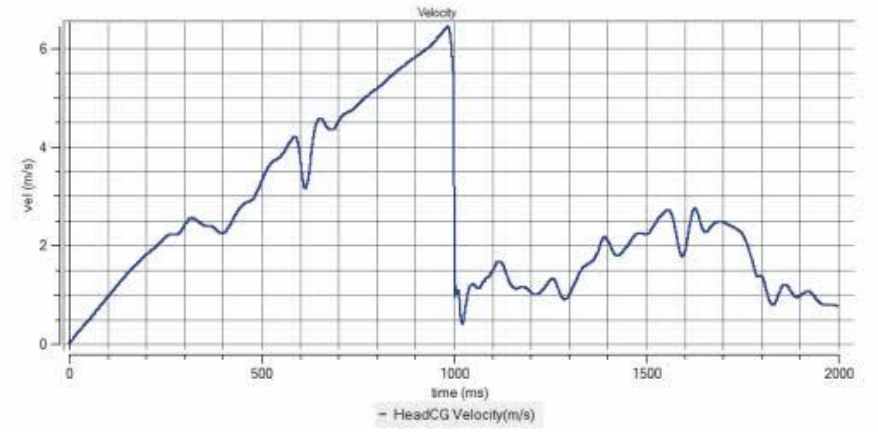
Calculation of acceleration of the head as function of falling time

Reconstruction of fall from a ladder using numerical methods

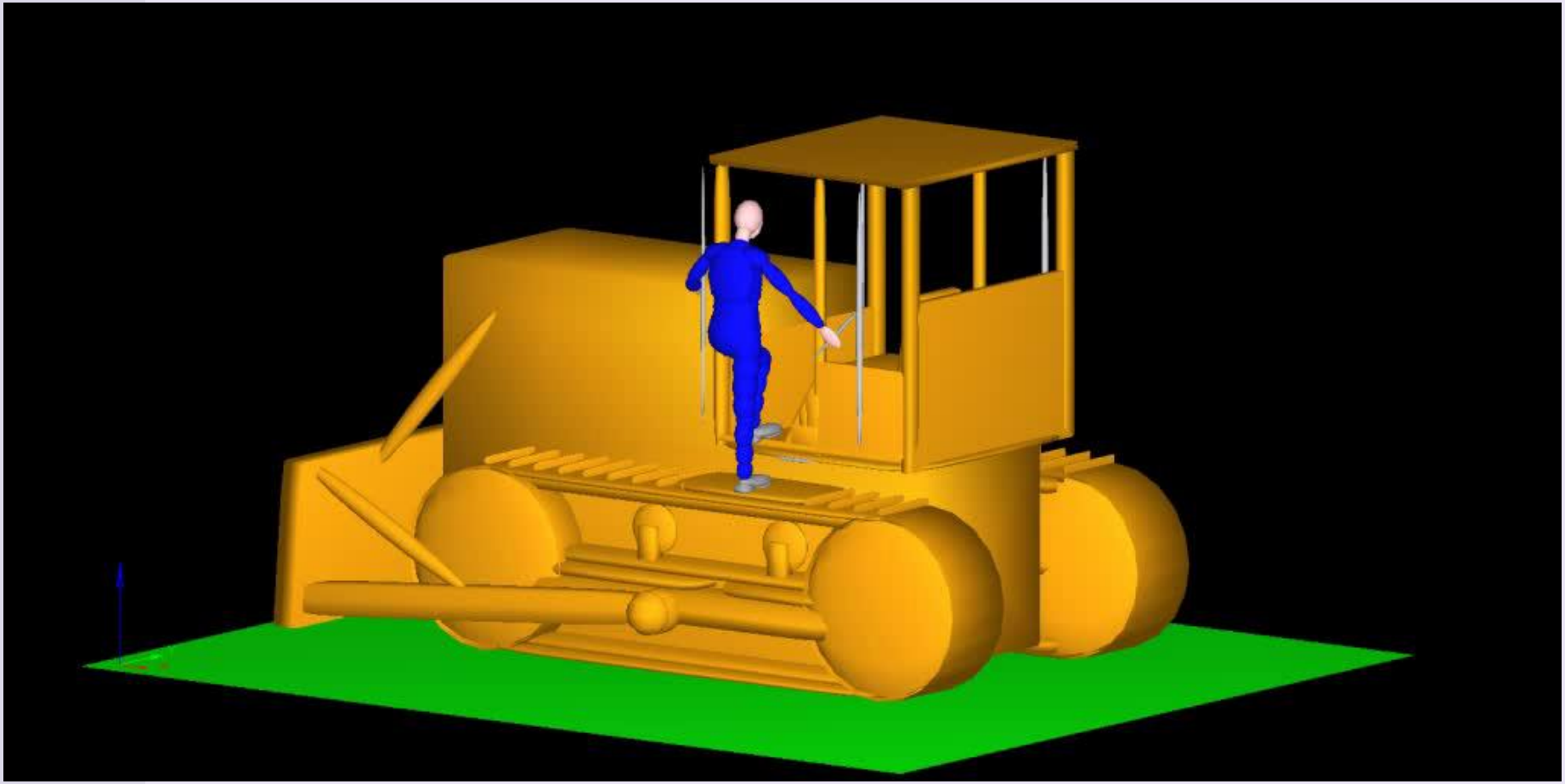
Diagrams present acceleration and velocity of the victim's head



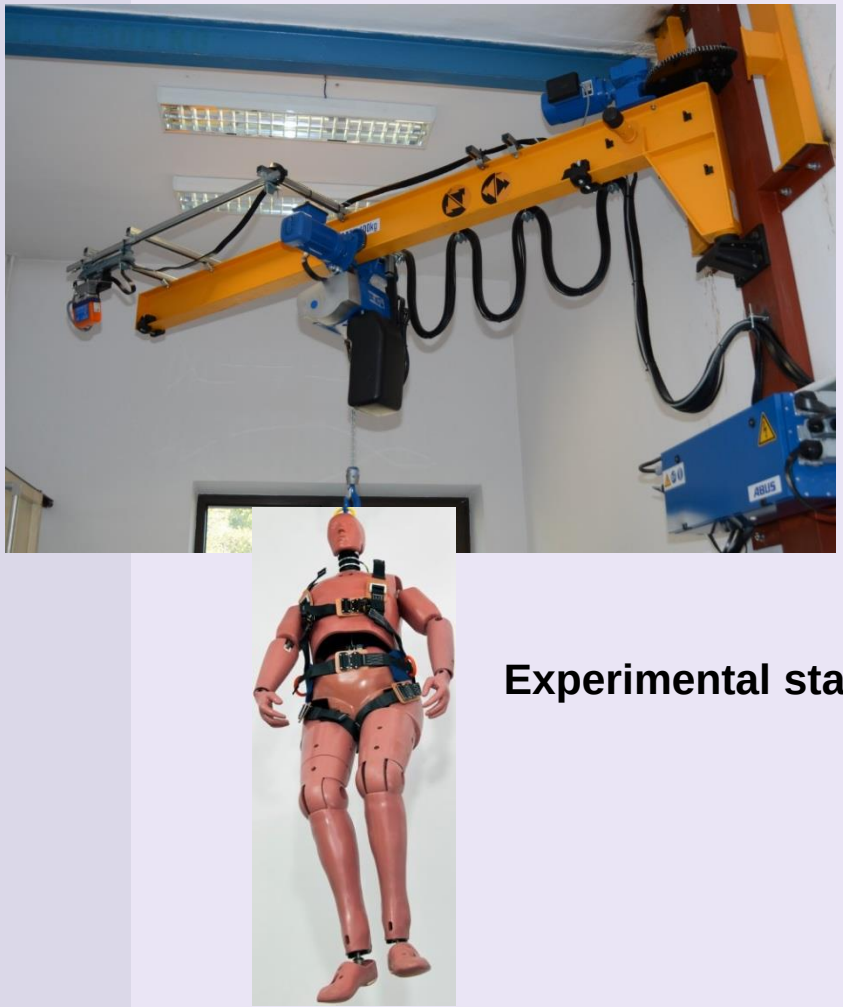




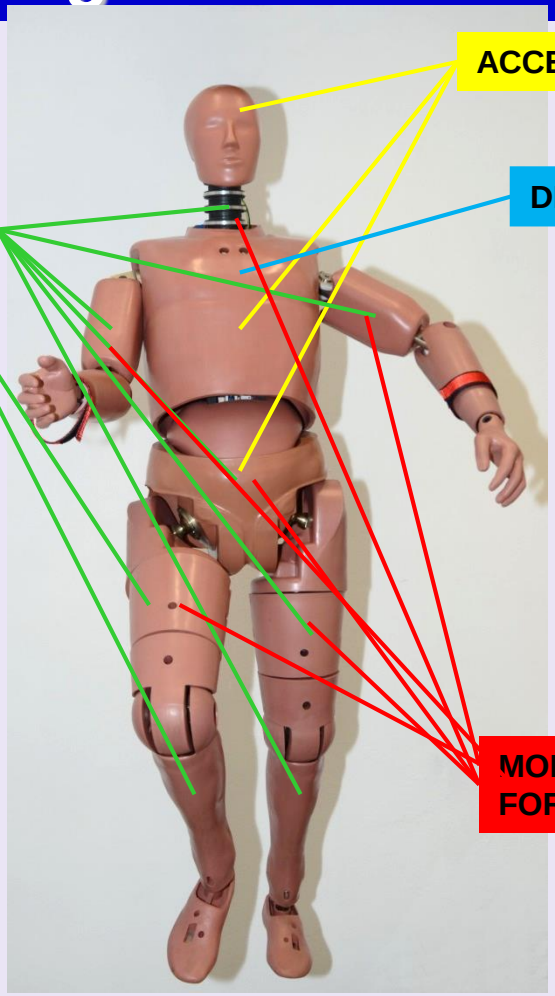
Reconstruction of the accident when leaving the cabin of a tracked bulldozer - computer visualization



Experimental station for studying mechanical phenomena accompanying a fall arrest



Experimental station



Anthropomorphic dummy equipped with internal data acquisition system.

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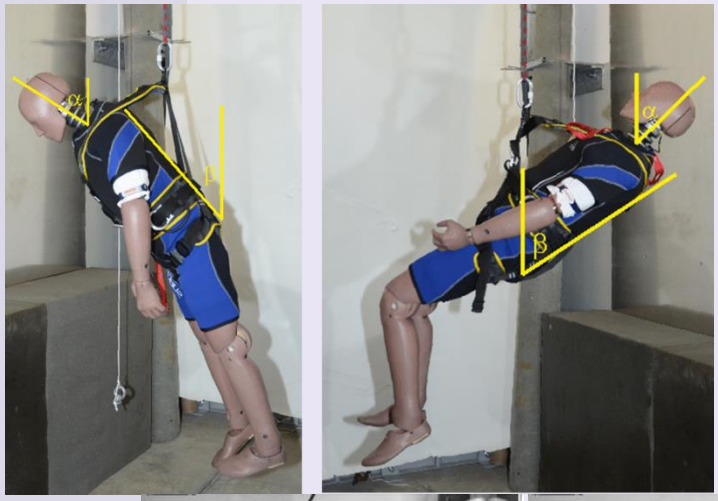
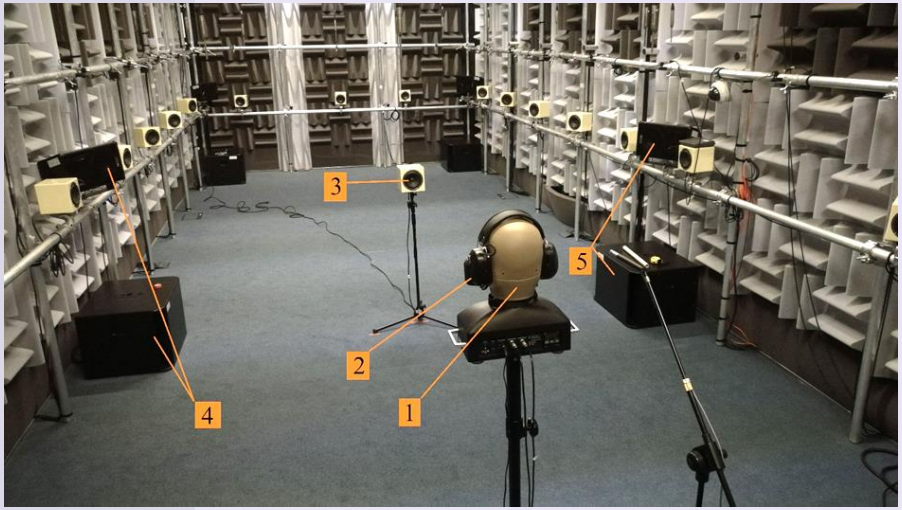
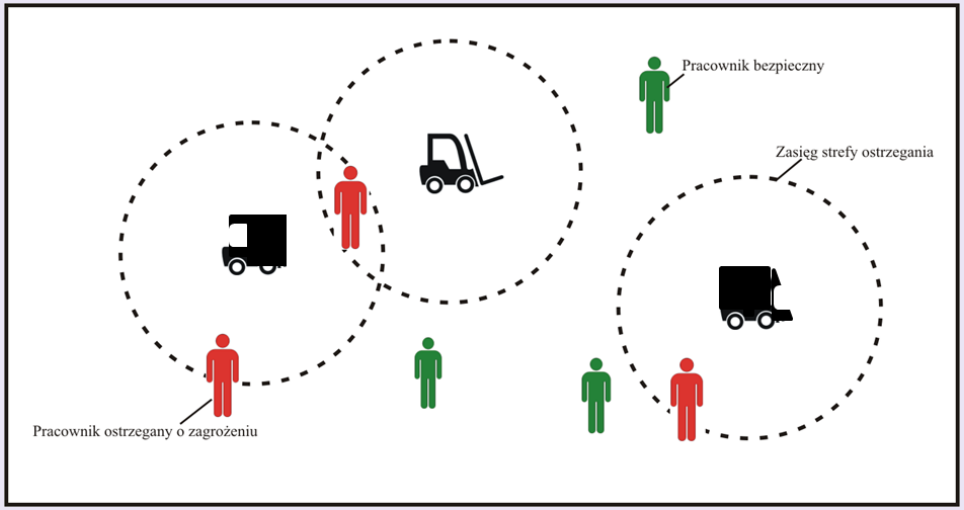


Example of phases of pendulum movement of a manikin equipped with a lanyard and safety harness

Warning system for persons using hearing protectors against approaching vehicles

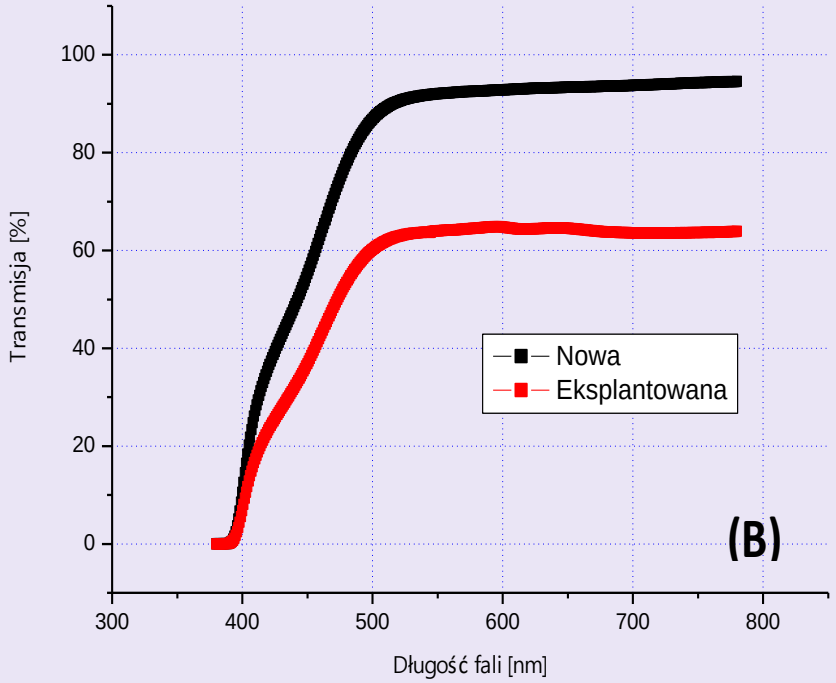




Warning system supported by:

- **signal transmitters to be placed on vehicles**
- **receivers (with alarm function) in workers' smart wereables**

Colour assessment during viewing through optical protective filters, including IOL



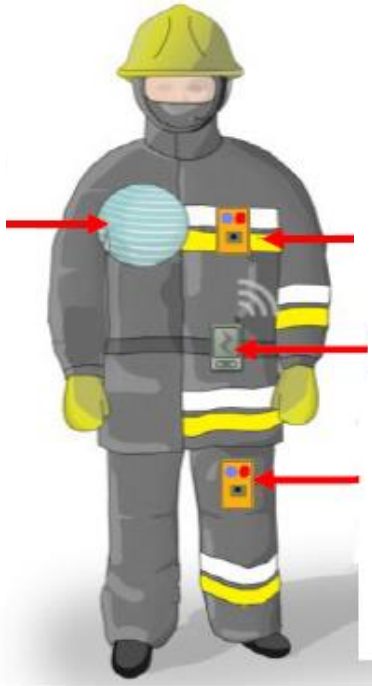
Phacoemulsification cataract removal procedure (A) and examples of IOL lens transmittance characteristics (B)

The concept of data processing about physiological parameters of a firefighter and potential hazards in the workplace in the cloud computing

Sensor data

The cloud computing

After processing data in the cloud, information about health and detected changes are generated.

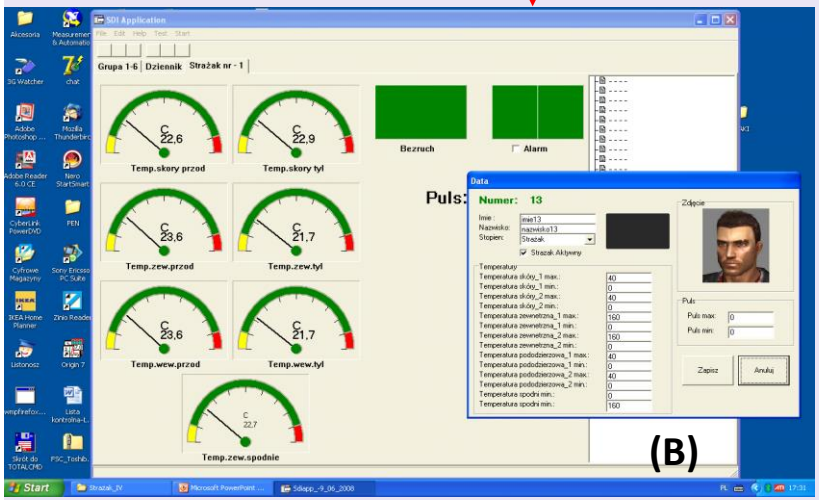


Sensor module for measuring selected physiological parameters

Sensor module for measurement of concentration of selected chemical substances of external temperature

Wireless communication module

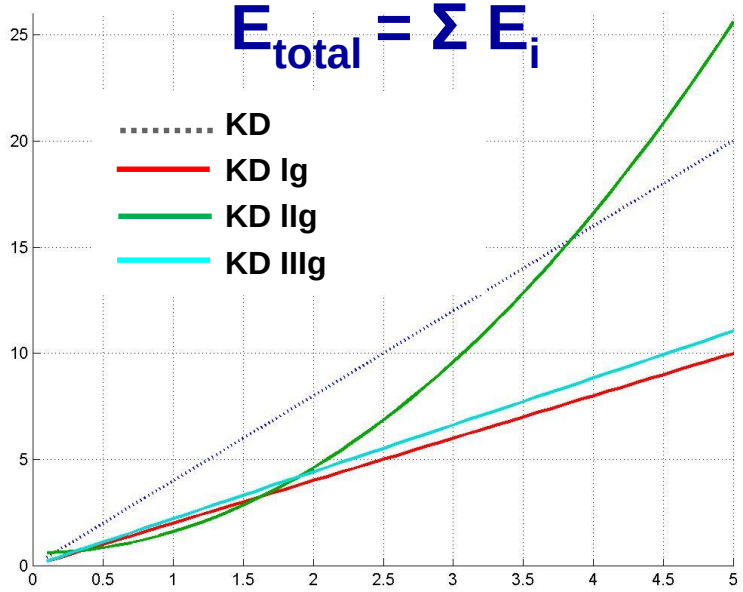
Sensor module for measurement of concentration of selected chemical substances of external temperature



CIOP PIB

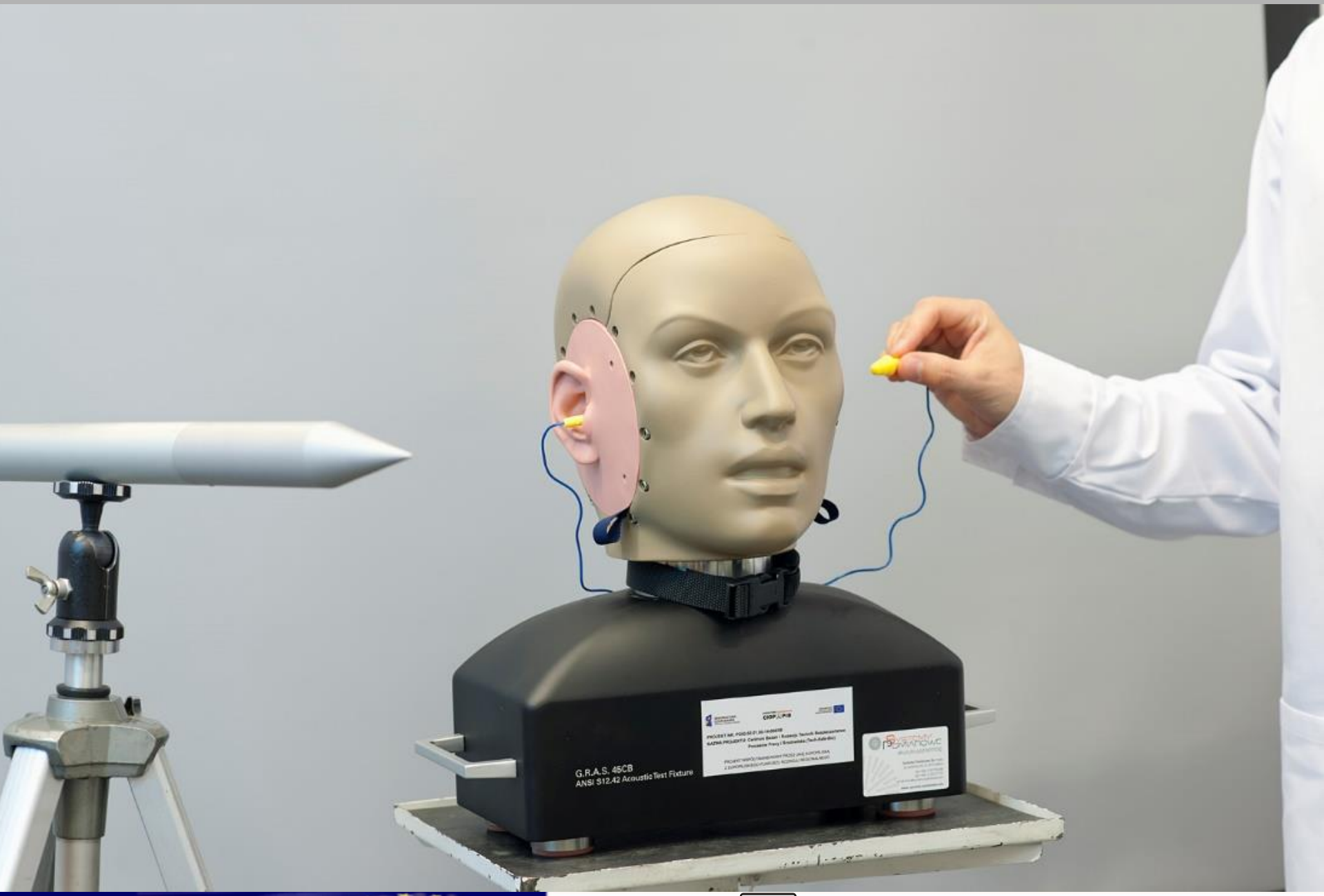
Asessment model of combined influence of whole-body and hand-arm vibration in the working environment

$$E_{total} = \Sigma E_i$$



KD: index for the total assessment of combined vibroacoustic hazards

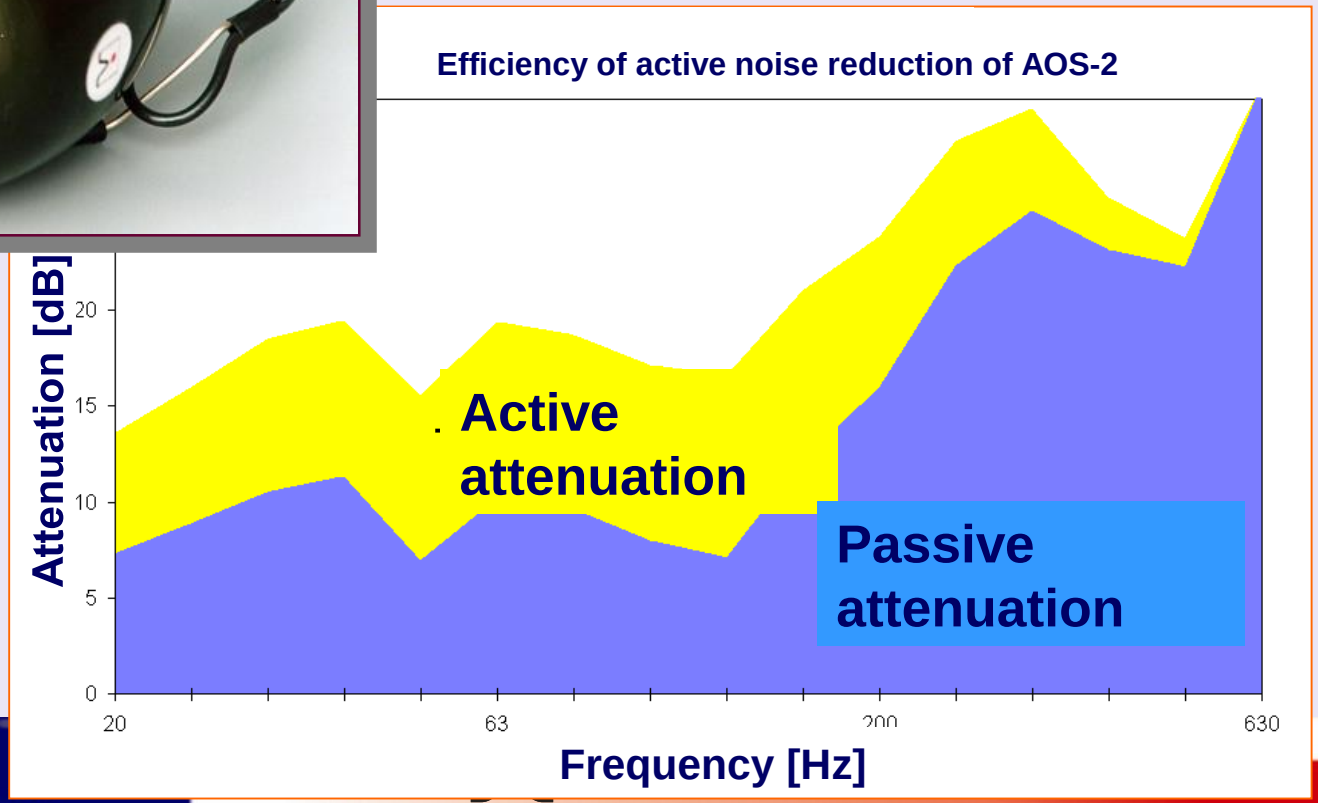
Certain part of vibroacoustic energy (E) influencing the driver is not taken into account when individual factors are estimated separately.


G.R.A.S. 45CB
ANSI S12.42 Acoustic Test Fixture

Active hearing protector (type: AOS-2)

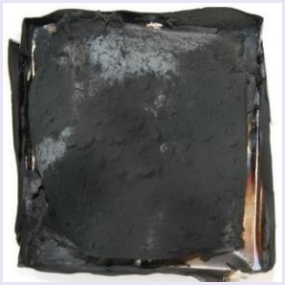
Basic technical parameters:

- active reduction level ca. 10 dB between 20 - 600 Hz

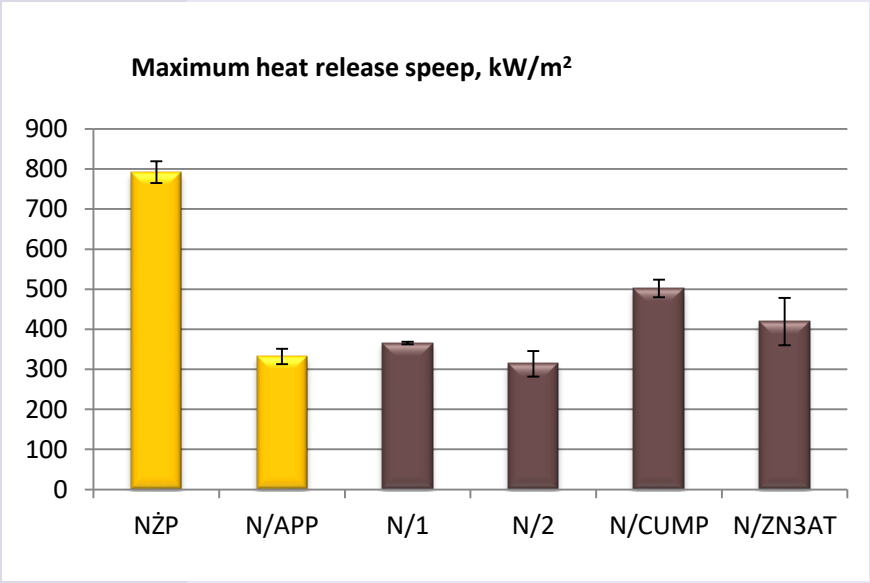


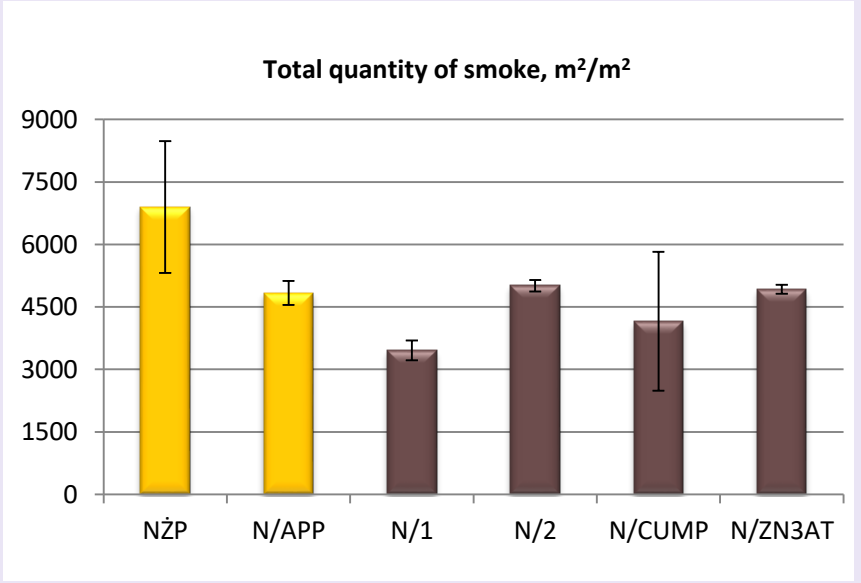
New systems of intumescent flame retardants with plastics

Phosphate (V) di-(melamine phosphate) copper (II)
CUMP



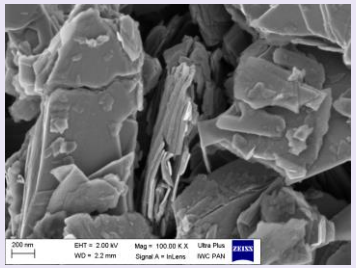
The flame retardant substances were characterized by the formation of a carbonization layer, which reduced flammability and smoke emission from the investigated plastics (unsaturated polyester resin and epoxide resin).



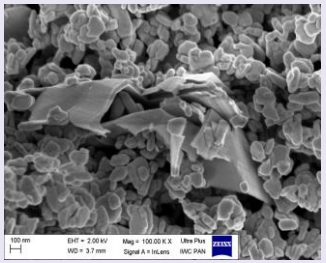


CIOP PIB

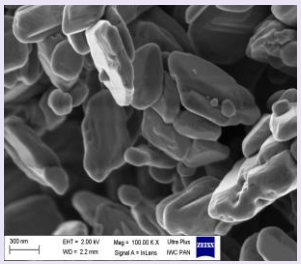
Assessment of cytotoxic effects of selected nanomaterials used in dry lubricants



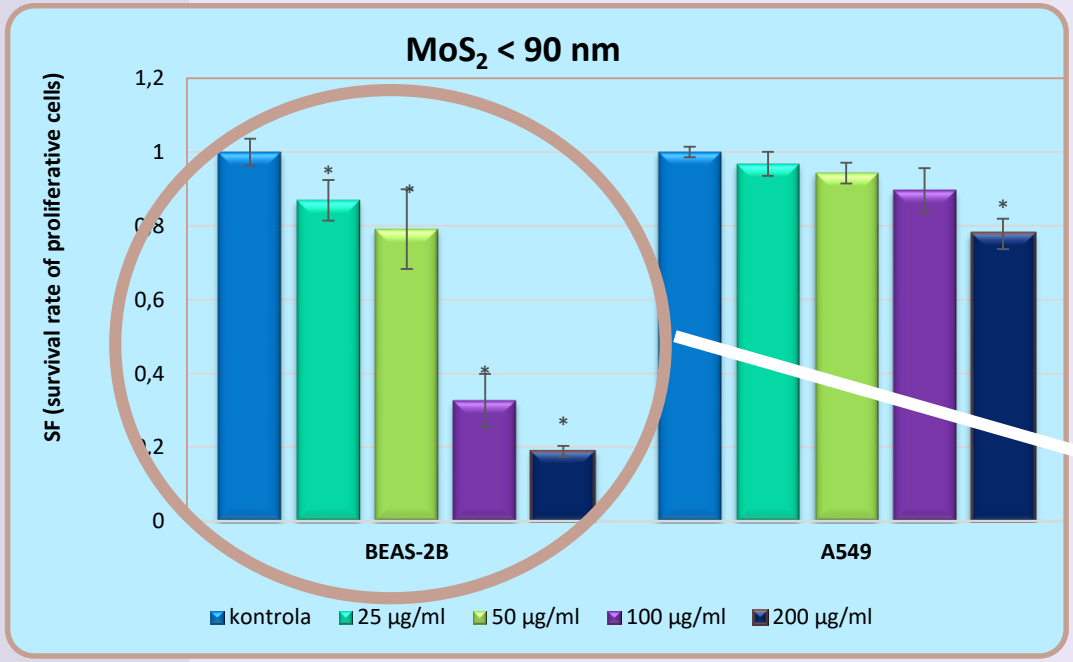
Molybdenum disulfide
< 90 nm



Tungsten disulfide
< 90 nm



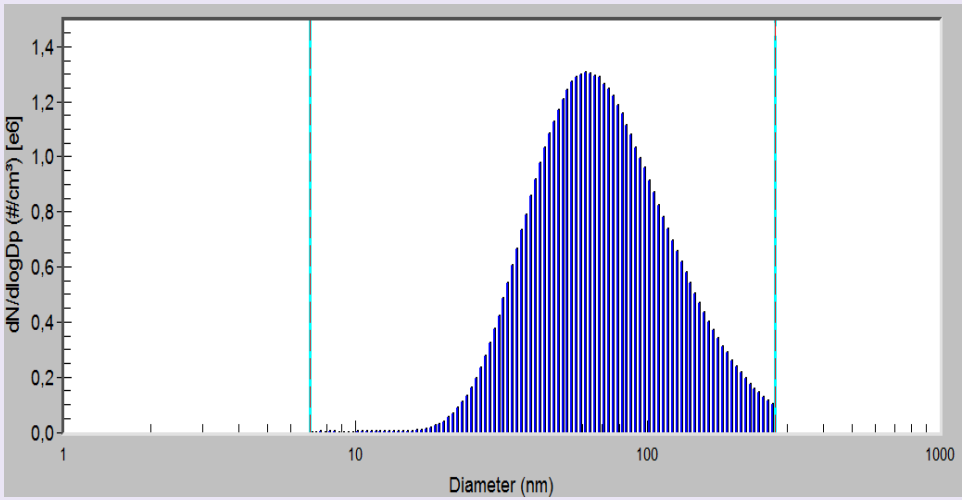
molybdenum trioxide
< 100 nm



- induction of inflammation
- inhibition of the ability to divide and colonise correctly

CIOP PIB

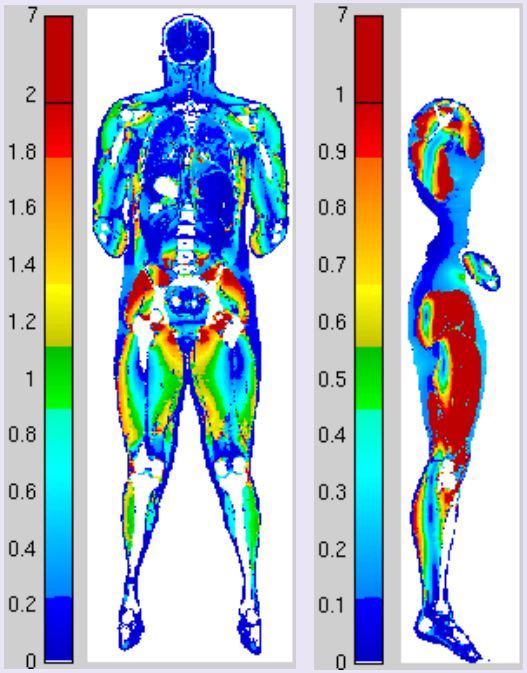
Development of requirements, test methods and a programme for the selection of respiratory protective equipment against nanoparticles

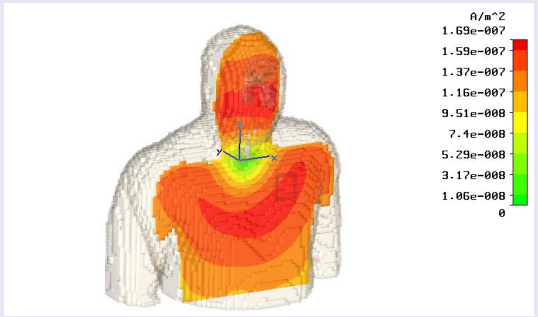


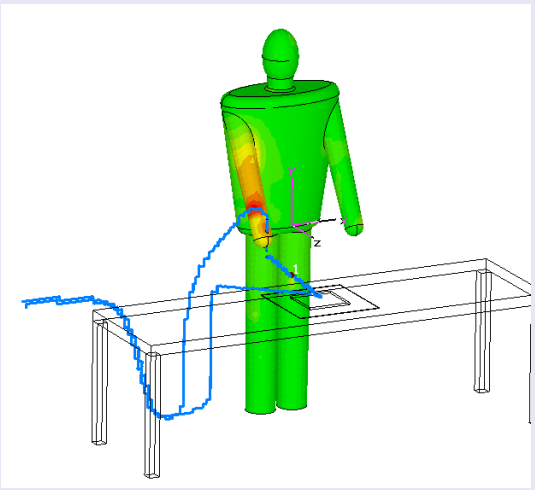
CIOP PIB

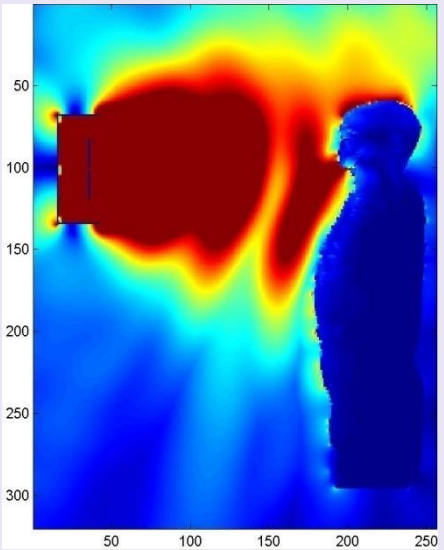
Sample applications of computer dosimetry for analysing internal exposure measures

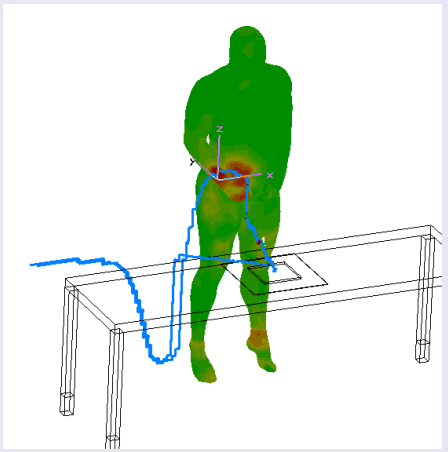
Internal exposure measures for electromagnetic fields:
- Specific absorption rate (SAR)
- Current density (J)





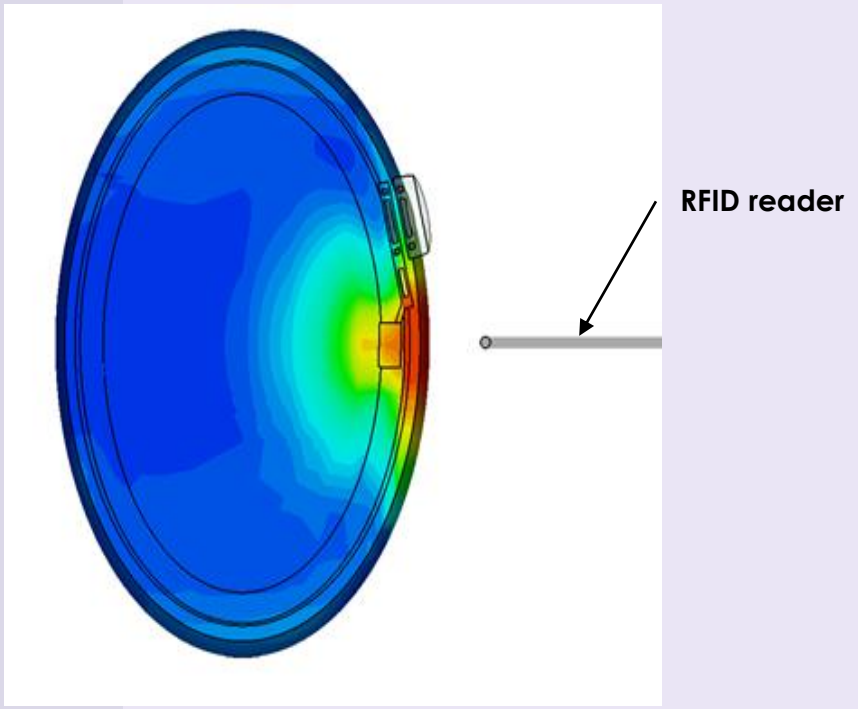




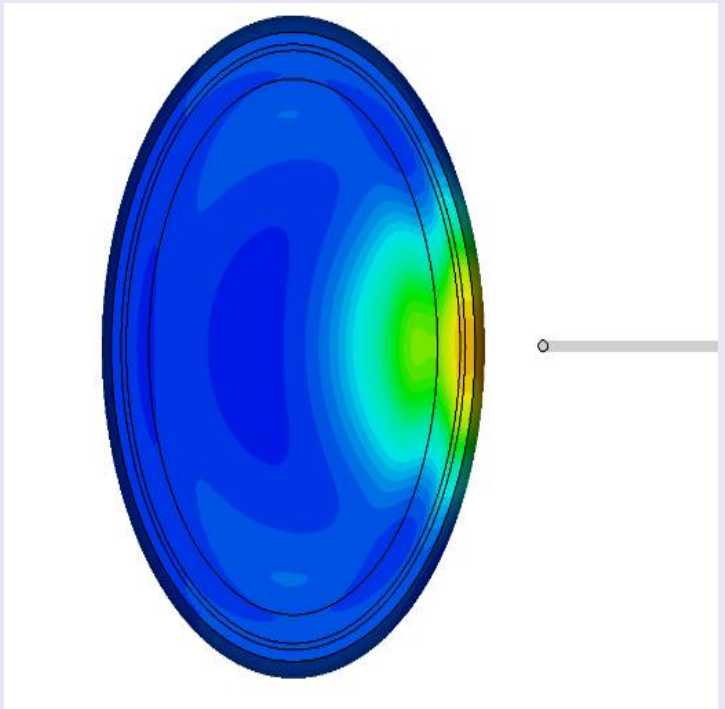


A method for testing electromagnetic threats in libraries, educational and commercial institutions using wireless communication devices (WiFi) or identification devices (RFID) has been developed.

a)



b)



Distribution of local SAR energy absorption rate values in the numerical model of the head of the user of the hearing implant (a) and the worker without the implant (b) - the highest SAR values in red

Tests of electromagnetic hazards during electrothermal food processing and rules for the use of protective equipment

Numerical model and results of simulation of the distribution of electric field of 40 kHz intensity induced in tissues of an insulin pump user working with an induction cooker

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Virtual reality traning application
Group cooperation training - fire department

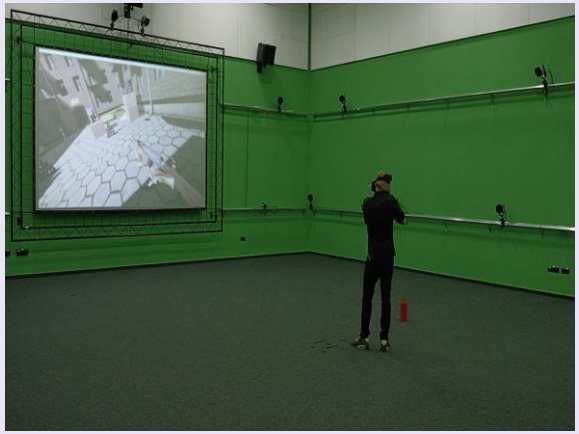
Fire-fighting actions in a building

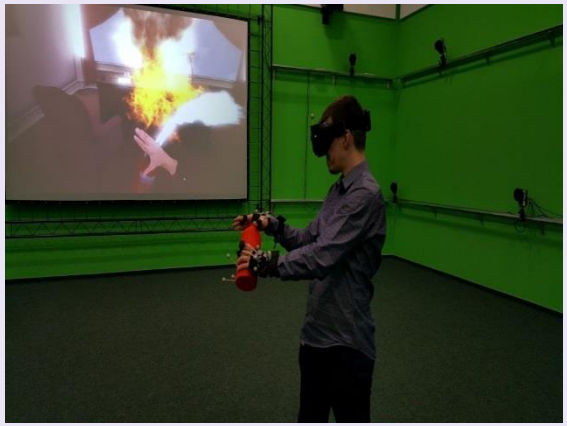
Rescue action in the car accident

Virtual reality techniques at CIOP-PIB

Vehicles and machines simulators (e.g. self-propelled mining machines)

Training in performing particularly dangerous works, including officers of uniformed services

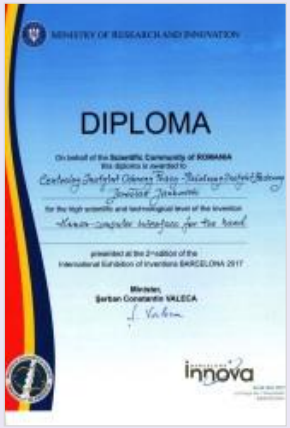




CIOP PIB

Awards and distinctions for the products of the multiannual programme achieved in 2017

Competitions and exhibitions	Number of awards and distinctions
international	2
national	4

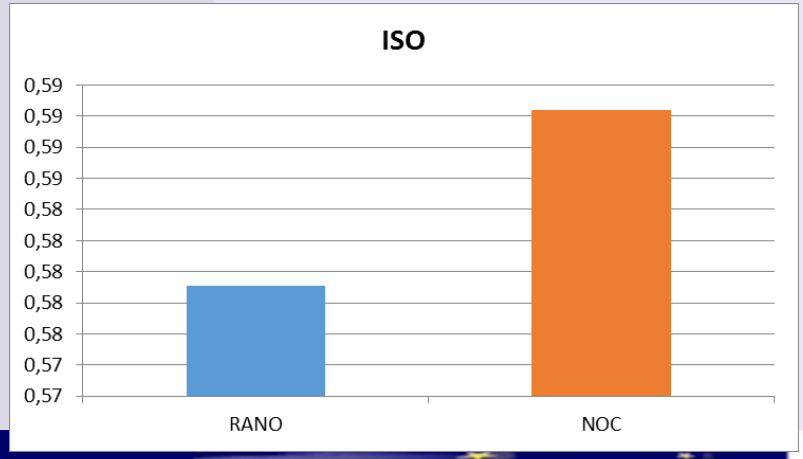


Social innovations developed by CIOP-PIB

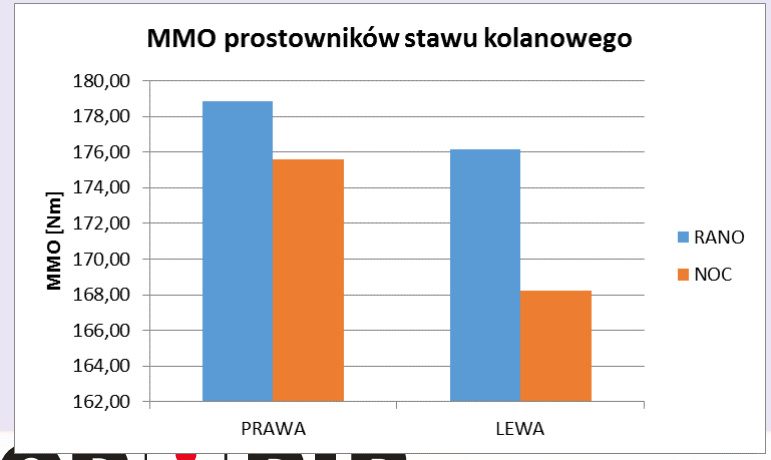
Assessment of workers' neuro-muscular system efficiency in a daily cycle

- Morning sessions 7.00 - 9.00
- Night sessions 1.00 - 3.00
  (15 people = 80 measurement sessions)

STABILITY INDEX IN THE SENSORY INTEGRATION TEST



MAXIMUM TORQUE FOR ANGULAR VELOCITY60 ^{0}/S



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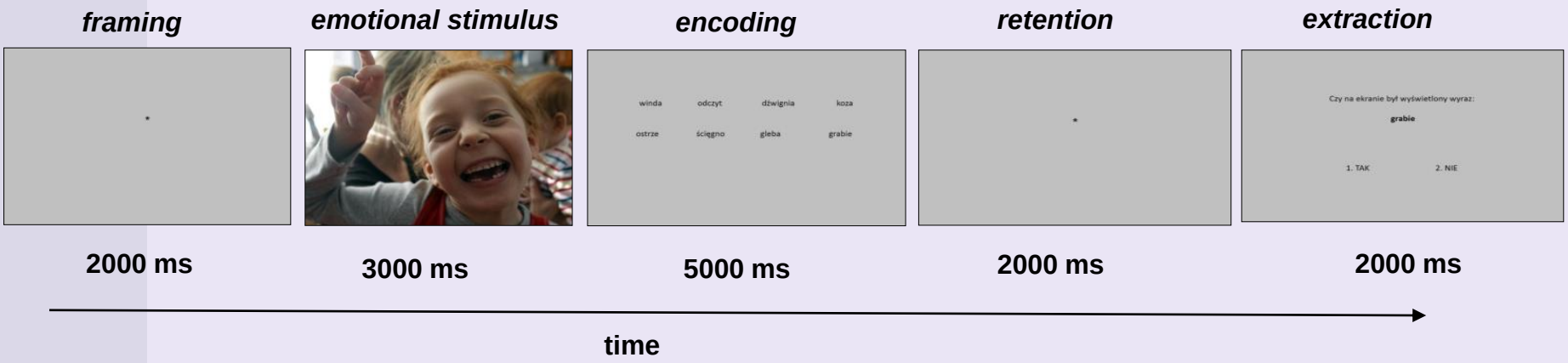
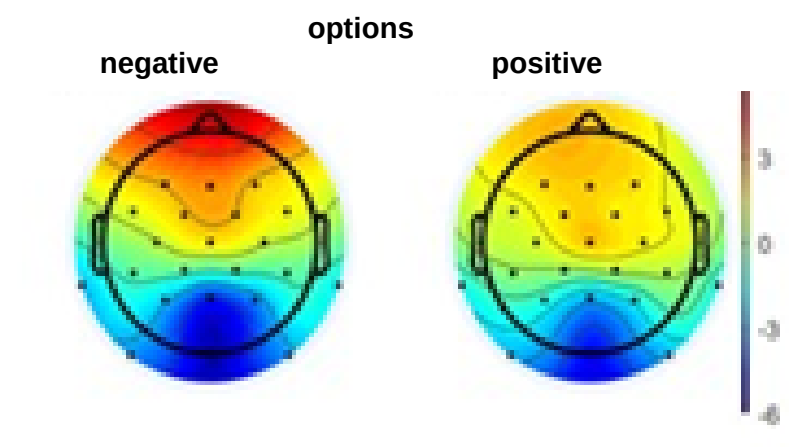
Development of indicators differentiating the impact of stressful situations on visual perception and the EEG signal waveform of people examined during mental work.





Higher amplitude of the potential response to a negative picture.
(N 100)

CIOP PIB

Breakthrough!

WORK PASSPORT

PIB

Work ability - a balance between employee's abilities (health condition, functional abilities, skills and competences) and work demands

(*Ilmarinen J., Tuomi K. 2004*)

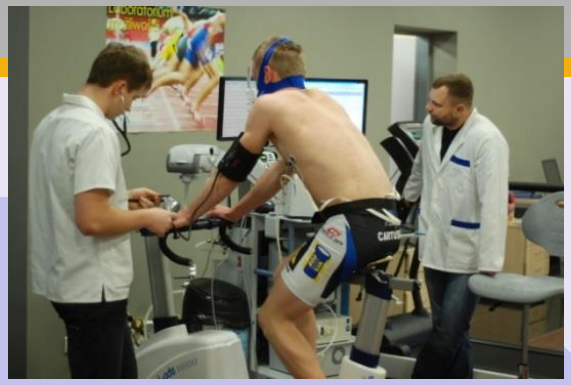
State Fund
For Rehabilitation
Of Disabled People

WORK PASSPORT

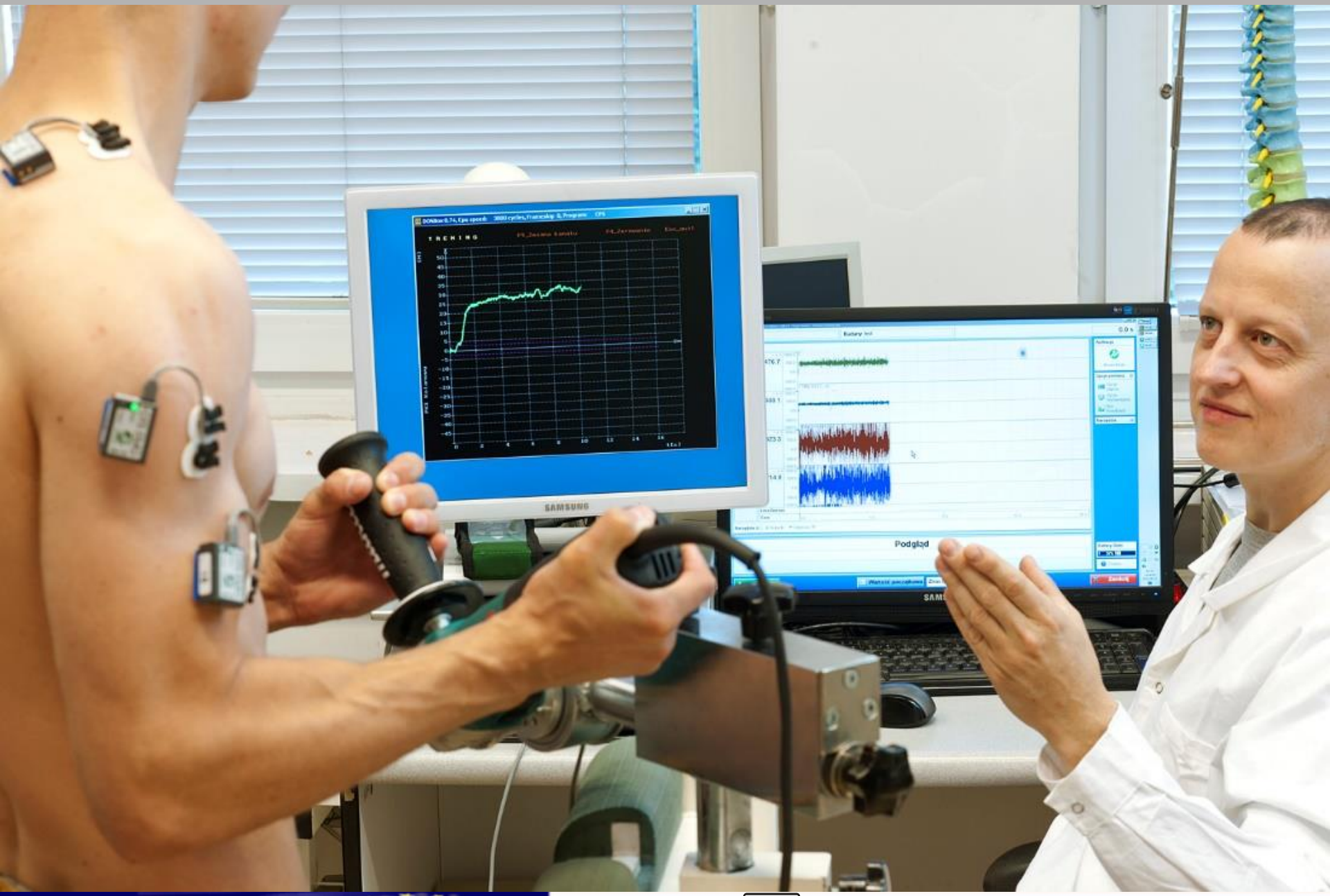
Individual work ability profile

A. Subjective assessment of one's own disability and potential in life

B. Objective assessment of work ability



Assessment of work ability in terms of physical, sensory and psychosocial abilities, professional competence



CIOP PIB

WORK PASSPORT

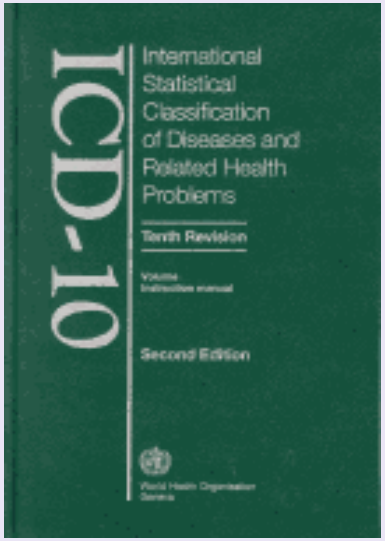
PHYSICAL AND FUNCTIONAL CAPABILITIES		Assessment low 1	2	standard 3	4	high 5
1.	**Hand grip force**	■	■	■		
2.	**Pinch grip force**	■	■	■		
3.	**Maintaining balance**	■				
4.	**Forearm and hand movement scope**	■	■	■	■	■
5.	**Sorting objects by hand**	■	■	■	■	
6.	**Assembly line work**	■	■			
7.	**Whole-body movement scope**	■				
8.	**Hand-eye coordination test**	■	■	■		
9.	**Eye-hand-foot coordination**	■	■	■	■	
10.	**Manual function and coordination**	■	■	■	■	
11.	**Lifting and muscular force capacity**	■				
12.	**Hand and finger dexterity**	■	■	■	■	
13.	**Reflexes**	■	■			

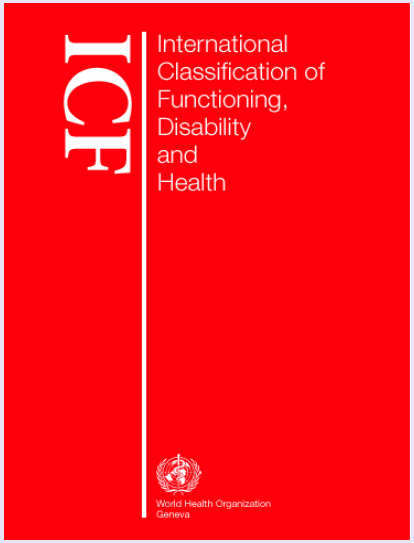
WORK PASSPORT

SENSORY ABILITY		Assessment low 1	2	standard 3	4	high 5
1.	**Aural ability**					
2.	**Visual ability – sight acuity**					
3.	**Visual ability – color sight**					
4.	**Mesopic vision**					
5.	**Vision after glare**					
6.	**Stereoscopic vision**					

Relationship between the international classification of diseases and health problems (ICD) and the international classification of functioning (ICF)

ICF supplements ICD





Diseases

(illnesses, disorders, injuries) and related health problems

Functioning

on the level of the body (handicaps), the person (activities) and the person in social (participation) taking into account environmental factors

Comprehensive attitude towards work ability assessment aims at defining not the limitations, but the abilities of the patient,

thus

increasing the chances of professional activation and mobility for the persons with disabilities.

The implementation of a comprehensive assessment of work ability will be used to:

1) support the disability assessment system
2) support people with disabilities in their choice of occupation
3) occupational rehabilitation of people with various types of acquired disabilities (e.g. after accidents at work)
4) determining the direction of vocational reorientation of people with disabilities

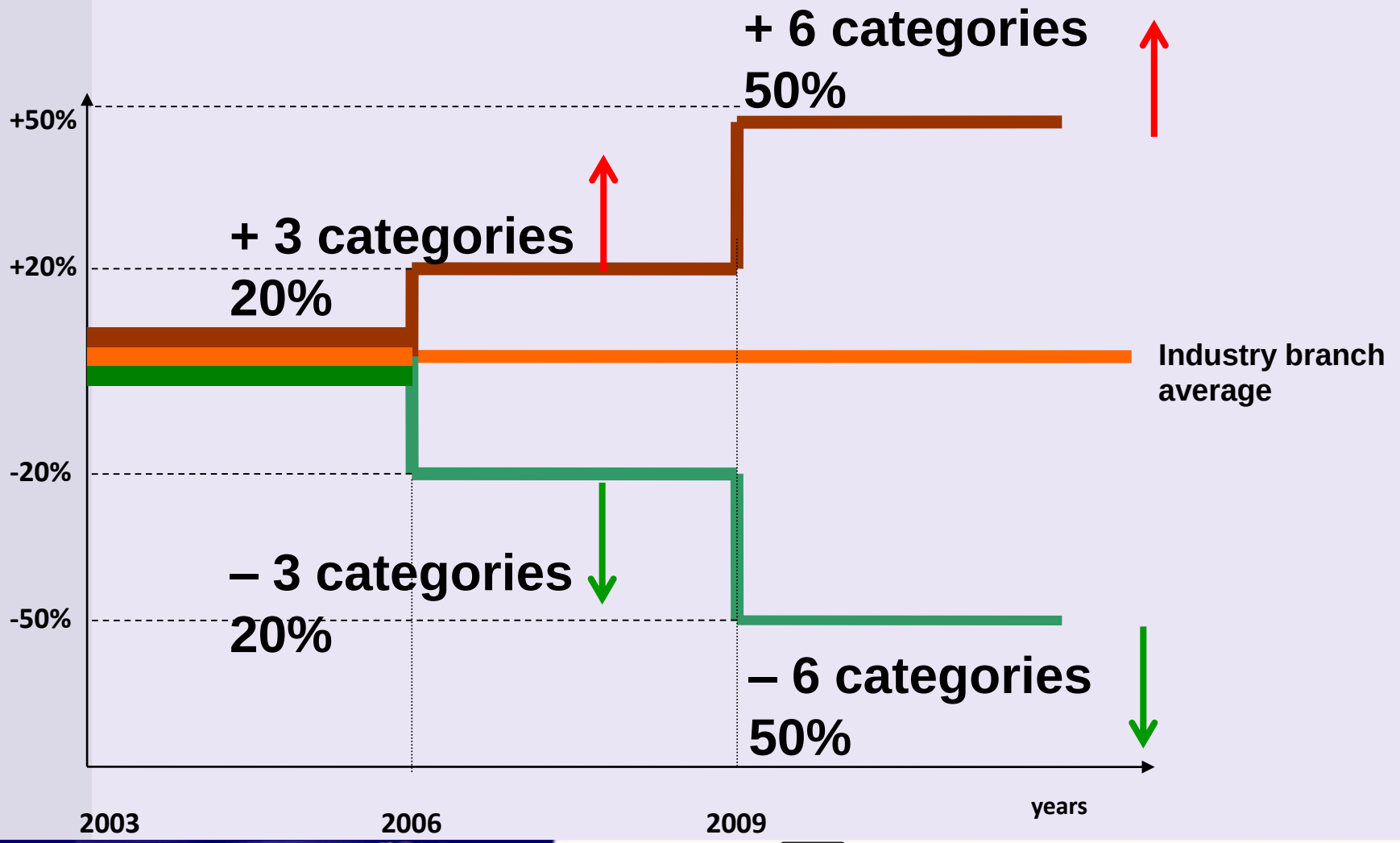
Methods of determining the premium for insurance against accidents at work for companies in Poland

INSURANCE PREMIUM

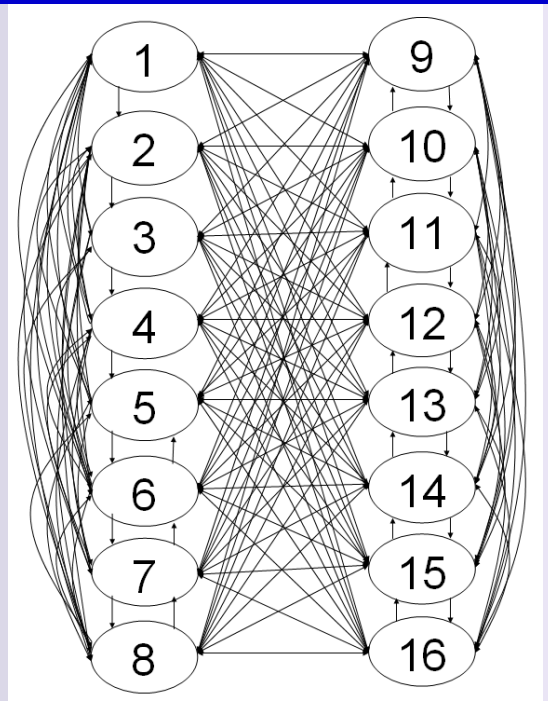
The insurance premium depends on rates (per 1,000 workers) of

- accidents at work (total)
- fatal and serious accidents at work
- persons working in hazardous conditions

Differentiation of insurance premium rate of enterprises in relation to accidents at work and number of people exposed to hazards



Modelling Occupational Health and Safety Management System with Fuzzy Cognitive Maps (FCM)



FCM model presenting influences between processes (1-15) and safety performance (16) in the OSH MS

Out of all processes in the OSH MS the improvement of safety leadership affects safety performance most

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3) **shaping a high level of safety culture among the employers and employees by developing the system of education and information on OSH requirements**

Educational materials

EDUCATIONAL MATERIALS FOR CHILDREN

Pilot versions of programmes with guidelines for conducting classes (in preschools and classes I-III of primary schools) according to scenarios included in the "Safe Preschools" and "Safe School" programmes.

EDUCATIONAL MATERIALS FOR PRIMARY SCHOOLS

http://kultbezp.ciop.pl/

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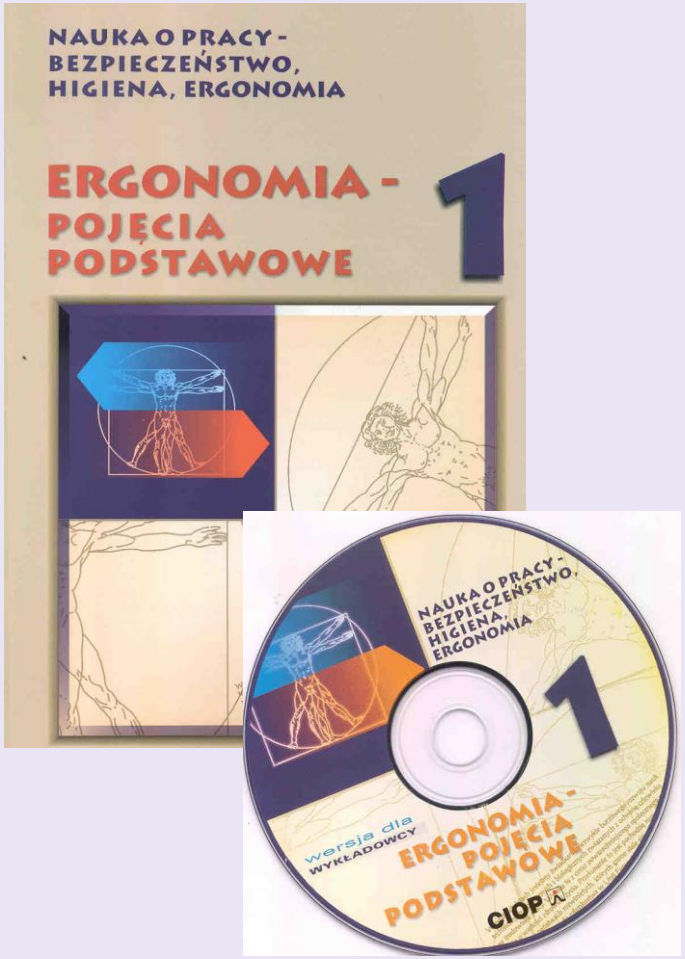
EDUCATIONAL MATERIALS FOR UNIVERSITIES



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CIOP – PIB Centre for Education

under the auspices of the Minister of FamilyLabour and Social Policy, the Minister of National Education and the Chief Labour Inspector.

Number of participants of various forms of education in 2017

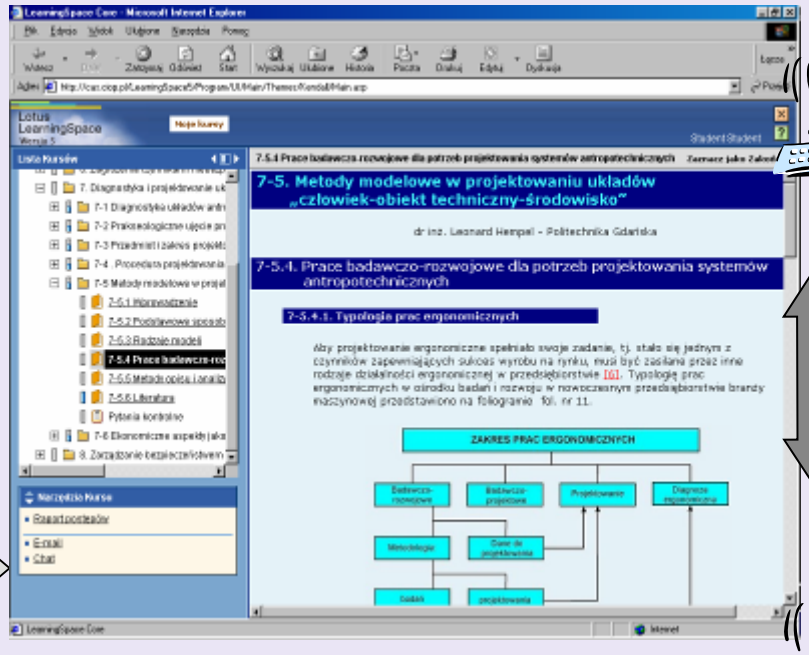
Total – 1202

including:

- ***Post-graduate studies : 93***
- ***Other training courses: 1109***

Distance learning
Education in the LearningSpace system

LearningSpace



Centre for Assessment and Improvement of OSH Competence

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Certification of competence:

- OSH lecturers
- OSH specialists in the measurement of working conditions parameters
- OSH MS auditors
- OSH consultants in SMEs

Offices of the Members of OSH expert network and Regional OSH consulting centres certified by and cooperating with CIOP-PIB

Members of OSH network of experts

Regional OSH consulting centres

CIOP PIB

Educational activities in 2017

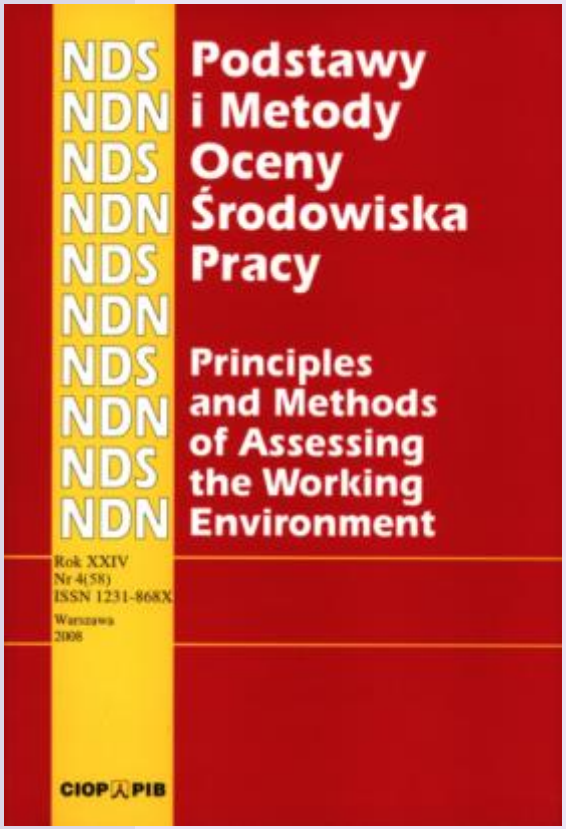
Development of:

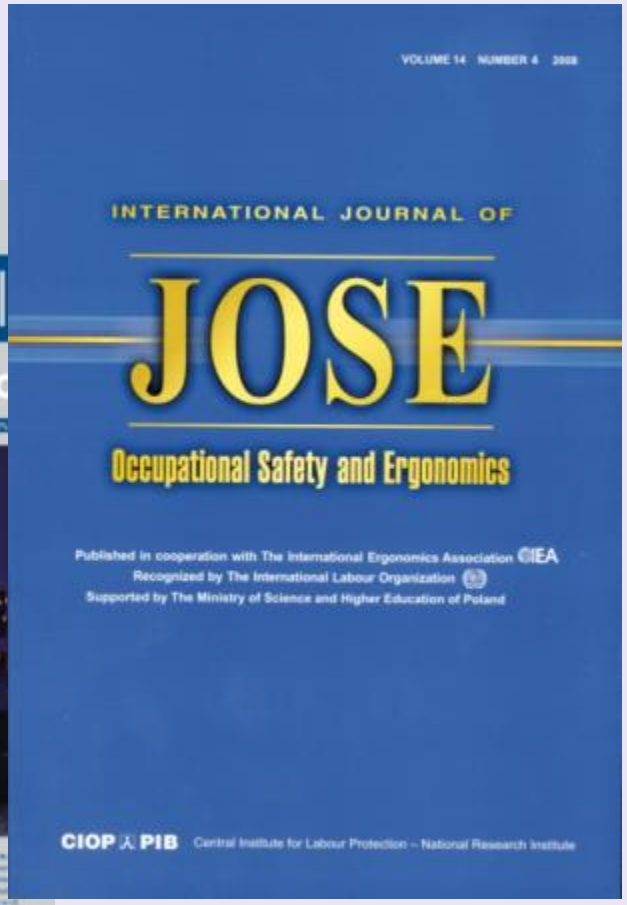
- ***Rules for the recognition*** **of qualifications acquired in the EU Member States and EFTA States for the exercise in Poland of regulated professions in the field of health and safety at work (European Free Trade Agreement)**

- ***Requirements in the field of knowledge and skills*** **of performing the following professions in Poland: specialist and occupational health and safety technician.**

Dissemination of results

Publishing activity
continuous publications





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Dissemination of knowledge in the field of safety and health at work during industry, domestic and foreign undertakings, including fairs, conferences, seminars

Active participation in:

- **2 foreign trade fairs (*Barcelona, Düsseldorf*)**
- **3 exhibitions accompanying national conferences**

Organised:

- **13 conferences, 6 seminars i 2 workshops for employers and employees and health and safety representatives**

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Polish editions of information campaigns of the European Agency for Safety and Health at Work (coordinated by the Institute)

Two-year European campaigns

Healthy workplaces campaign 2008 – 2009
on Risk Assessment

Healthy workplaces campaign 2010 – 2011
on Safety Maintenance

Healthy workplaces campaign 2012 – 2013

„Working togheter for risk prevention”

Polish editions of information campaigns of the European Agency for Safety and Health at Work (coordinated by the Institute)

Two-year European campaigns

Healthy workplaces campaign 2014 – 2015

„Healthy workplaces manage stress”

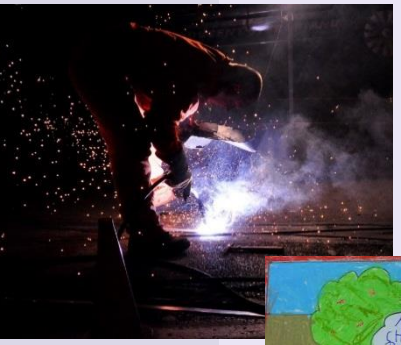
Healthy workplaces campaign 2016 – 2017

„Healthy Workplaces for all ages”

Healthy workplaces campaign 2018 – 2019

„Healthy Workplaces manage dangerous substances”

Competitions



4 competitions on safety and health:

- safety poster competition
- art competition
- photography contest
- film contest

Print-outs of:

- safety posters – 3 thousand
- posters catalogues – 0.6 thousand of copies
- postcards with posters – 1.5 thousand of copies
- „Wasz Kurier Ilustrowany O!ZNAKI PRACY" – 0.5 thousand of copies

Recipients of programme results – 62800 persons

Partners in information and promotion activities of CIOP-PIB

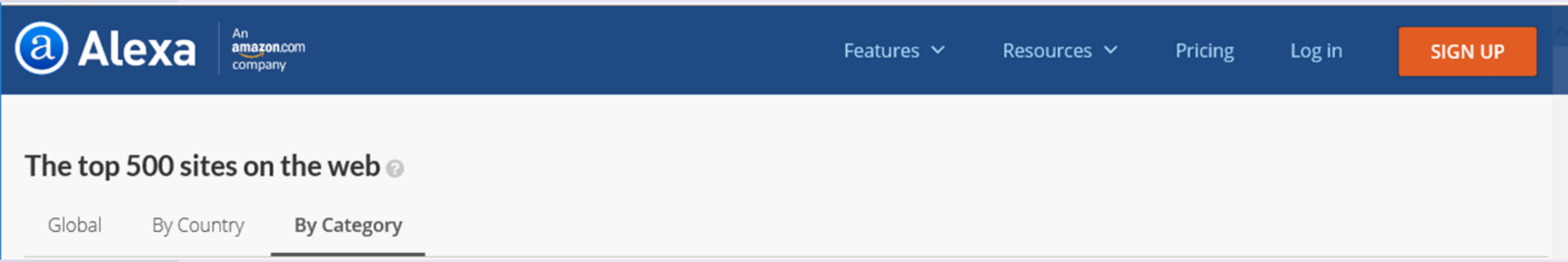


employers, employees, health and safety service, experts, supervisory and control institutions, students, school pupils, children and others


CIOP PIB

Number of visits to www.ciop.pl with subdomains

YEAR 2017	
Number of visits	3.26 million
Number of downloaded pages	13.5 million



Position of the www.ciop.pl portal among the websites of institutions dealing with safety at work in the Alexa.com ranking.

Region	Place
Poland	1
Europe	6
World	18

2017

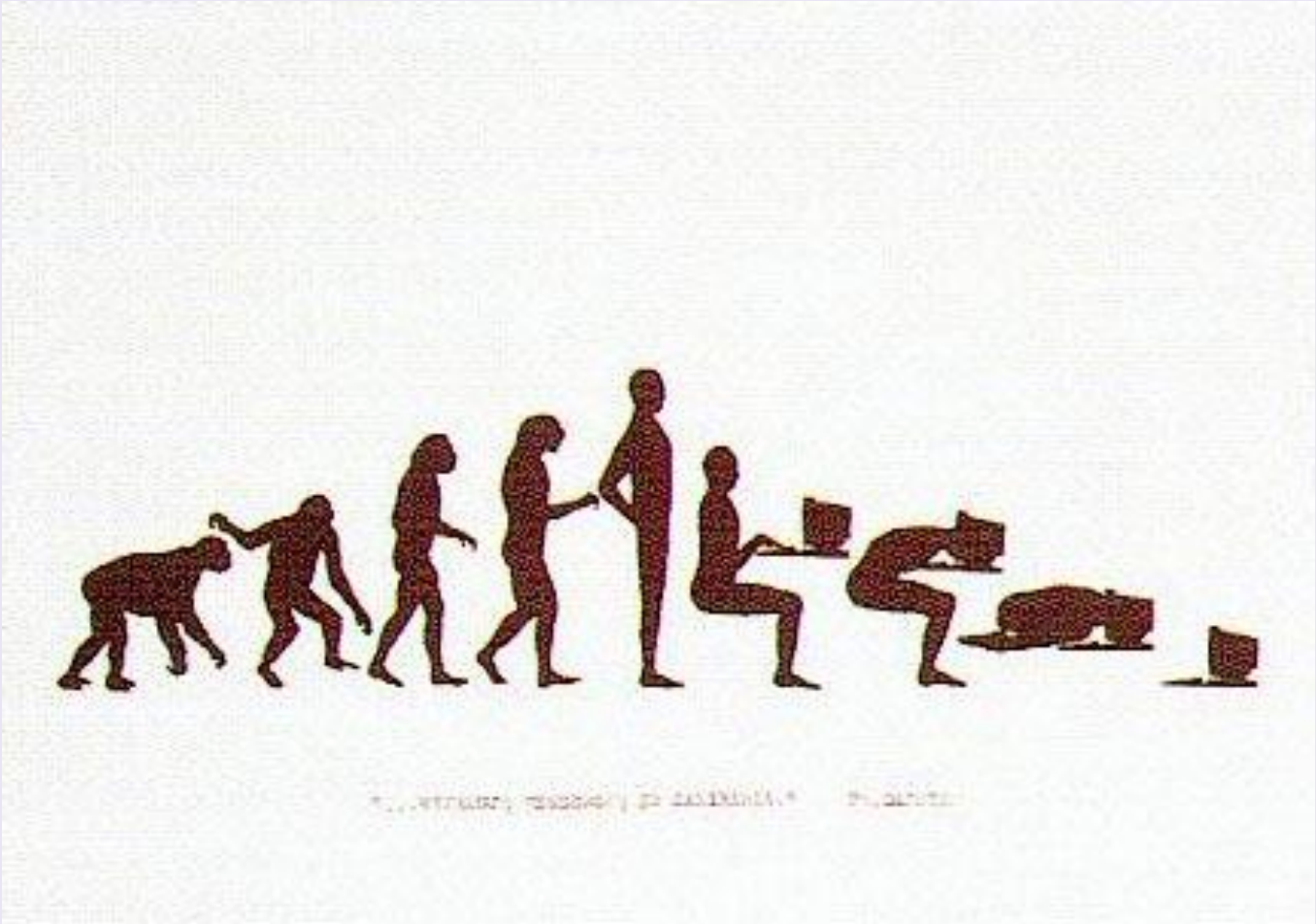
CONCLUSIONS

1. Poland, as a member of the European Community since 2004, has harmonised its OSH legal regulations and practices with those of the Community.

CONCLUSIONS

2. **The National Programme „Improvement of Safety and Working Conditions” has been confirmed by „National Strategies Mapping” report prepared by EU-OSH (2016)**

QUO VADIS ?



21st CENTURY

New tendencies

- transfer from the manufacturing society to the consumption and/or information society
- increased individualism at work and 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
- fixed-term contracts
- computerized supervision
- knowledge-based management
- multi-directional competences
- an increasing number of SMEs

We must take up these challenges

together as members of the European Union,

and our OSH-dialogue

is an excellent example.

THANK YOU FOR YOUR ATTENTION

www.ciop.pl