



Financed by the  
European Union

# Better prevention, identification and reporting of work-related and occupational diseases and emerging risks

Prevention Reporting Identification Work-Related and Occupational Diseases

EUROPEAID/132633/C/SER/MULTI Framework contract Beneficiaries –  
Lot n°8 – Health  
Contract for services: RfS 2016/380168/1

final report

Client: **Delegation of the European Union to Russia**

ECORYS Health Consortium

Implemented by:



Rotterdam, September 2018

ECORYS Nederland BV  
P.O. Box 4175  
3006 AD Rotterdam  
Watermanweg 44  
3067 GG Rotterdam  
The Netherlands

T +31 10 453 88 00  
F +31 10 453 07 68  
E [netherlands@ecorys.com](mailto:netherlands@ecorys.com)  
W [www.ecorys.nl](http://www.ecorys.nl)  
Registration no. 24316726

Dept. of Marketing & Communication  
T +31 (0)10 453 88 31  
F +31 (0)10 453 07 68

	Initials	Date
Author(s)	DS	02/08/2018
Counter-reading	DA, PM	07/08/2018
Lay-out / editing	OV	28/09/18

# Table of contents

List of acronyms and abbreviations	5
Executive summary	7
Assignment	7
Research Questions	7
Methods	7
Registration of OD in the NDPHS member countries	8
Estimates of OD and WRD	8
Conclusions	8
Recommendations	9
1 Introduction	11
Geographical scope	11
Specific objectives	11
Definitions	12
International context	14
Research Questions	15
2 Methods	17
Work packages	17
Recruitment and instructions of the country experts	17
Drafting of the questionnaire	18
Analysis of country bases answers to the questionnaire	18
Estimates of OD and WRD/Identification of ER	18
Estimating OD: alignment with the Realloc study	19
Estimating WRD	19
Identifying ER	20
3 Registration of OD in the NDPHS member countries	21
Introduction	21
3.1 Belarus	21
3.2 Estonia	23
3.3 Finland	27
3.4 Germany	31
3.5 Latvia	39
3.6 Lithuania	41
3.7 Norway	46
3.8 Poland	48
3.9 Russian Federation	51
3.10 Sweden	54
3.11 Summary of the country reports	56
4 Estimation of OD, WRD and ER	59
Introduction	59
4.1 Belarus	60
4.2 Estonia	60
4.3 Finland	62
4.4 Germany	63
4.5 Latvia	65
4.6 Lithuania	65
4.7 Norway	66
4.8 Poland	67
4.9 Russian Federation	68

# Table of contents

4.10	Sweden	69
4.11	General comments	69
4.12	Calculation of OD's in the participating countries using the Realloc-1 method	70
4.13	Calculation of WRD's in the participating countries using the Realloc-2 method	70
5	Discussion	73
6	Dissemination plan	76
6.1	Introduction	76
6.2	Concept for first draft of training materials	78
6.3	Research concept on work-attributable fractions of work-related diseases	80
6.4	Dissemination plan and publishing of the report	81
6.5	Dissemination plans in participating countries	81
6.5.1	Belarus	81
6.5.2	Estonia	82
6.5.3	Finland	82
6.5.4	Germany	82
6.5.5	Latvia	83
6.5.6	Lithuania	84
6.5.7	Norway	84
6.5.8	Poland	84
6.5.9	Russian Federation	85
6.5.10	Sweden	85
7	Conclusions	86
8	Recommendations	87
8.1	Recommendations for improvement of reporting OD	87
8.2	Recommendations for getting better information on WRD	87
8.3	Recommendations for improvement of identifying ER	88
8.4	Recommendations for improvement of training and education	88
9	Annexes (in Volume 2)	90

# List of acronyms and abbreviations

ArbSchG	Occupational and Safety Act (Germany)
BMAS	Federal Ministry of Labour and Social Affairs (Germany)
BSN	Baltic Sea Network
CSR	Committee of Senior Representatives
DALY	Disability-Adjusted Life Year
DGUV	German Social Accident Insurance
EBM	Evidence Based Medicine
ER	Emerging risks or emerging diseases
ESPrIT	Strengthening the Occupational Health Expertise and Scientific Performance of Public Health Institution of Turkey (PHIT)
EU OSHA	European Agency for Safety and Health at Work
FROD	Finnish Register of Occupational Diseases
GDA	Joint German Occupational Safety and Health Strategy
HSE	Health and Safety Executive (UK)
ICD-10	International Statistical Classification of Diseases and Related Health Problems
ICOH	International Commission on Occupational Health
ILO	International Labour Organization
INQA	New Quality of Work Initiative (Germany)
IR	Incidence rate
Kela	Social Insurance Institution of Finland
MDI	Methylene diphenyl diisocyanate
MEDN	Medical and rehabilitation expert commission (Belarus)
MELA	Farmers' Social Insurance Institution (Finland)
MSD	Musculoskeletal Diseases
NAK	National Occupational Health and Safety Conference (Germany)
NAV	Norwegian Labour and Welfare Administration
NDNT	Ministry of Social Security and Labour (Lithuania)
NDPHS	Northern Dimension Partnership in Public Health and Social Well-being
OD	Occupational diseases
OHSA	Occupational Health and Safety Administration
OCCUSTAT	Expert Group on occupational diseases
OMS	Occupational Medicine Service (Poland)
OSH	Occupational Safety and Health
OSH EG	Expert Group on Occupational Safety and Health
PAC	Partnership Annual Conference
QALY	Quality-adjusted life year
RF	Russian Federation
SODRA	State Social Insurance Fund Board (Lithuania)
TFA	Swedish Insurance for Occupational Injuries (Swedish abbr.)
ToR	Terms of reference
TVK	Finnish Workers' Compensation Centre
Tytal	Workers' Compensation Act of Finland
WHO	World Health Organization
WP	Work package
WRD	Work related diseases



# Executive summary

## Assignment

The overall global objective of this research is to improve the understanding, identification and reporting of **work-related** diseases in the Northern Dimension Partnership in Public Health and Social Well-being (NDPHS). It also aims to disseminate this information at a global scale in cooperation with the European Agency for Safety and Health at Work (EU OSHA), Eurostat, the International Labour Organization (ILO), the International Commission on Occupational Health (ICOH) and the World Health Organization (WHO). The project will provide a better understanding of the patterns of **Work Related Diseases** (WRD), **Occupational Diseases** (OD), and **Emerging Risks** (ER) in the region and provide qualitative and (to the maximum possible extent) quantitative information for better understanding these issues. In the long run, better and more detailed information will help to enhance the currently used preventive strategies in the NDPHS region and in the member states of the European Union as well.

## Research Questions

The following research questions were deduced from the Terms of References (TOR):

- How are OD, WRD and ER recorded in the participating countries?
- What is the estimated **incidence rate** (IR) of OD and WRD in the participating countries?
- How can reporting of WRD, OD, and ER be improved? How to provide policy information for decision-makers, jointly with member countries, ILO, WHO, ICOH, EU working group OCCUSTAT?
- How can training and education of occupational health experts be improved to increase prevention and detection of work-related and occupational diseases?

## Methods

The project is divided into three **Work packages** (WP) to fulfil the above listed objectives. The *rapporteurs* from the participating countries were responsible for describing their national data collection systems of work-related (WRD) and occupational diseases (OD) as well as emerging risks (ER) in their own countries. All member countries of the NDPHS initiative, as well as Belarus (an observer country to NDPHS) participated in the project – altogether **10 countries**.

The national lists and criteria for reporting of occupational and work-related diseases and emerging risks have been collected within the project.<sup>1</sup> The identification and reporting systems are described, as well as barriers to identification and reporting, possibilities for an early warning system have been detected. The project also focused on the future policy-supporting surveys and research to improve statistical data collection and information. By analysing this information, the project has been able to identify gaps and create recommendations to improve reporting systems for effective prevention.

In line with the ToR, the information concerning OD, WRD and ER has been gathered by means of a questionnaire containing fixed questions, which had been developed by the service provider together with the Occupational Safety and Health Expert Group (OSH EG)<sup>2</sup>. According to the ToR, the method needed to be aligned to the exercise that OSH EG carried out in the *Realloc* project to enable comparability with previous research. A major effort was devoted to collect evidence based data and information as requested in the EU OSH framework strategy (the *Realloc* project provided

---

<sup>1</sup> See the Annex.

<sup>2</sup> OSH EG comprises high-level experts from national ministries and agencies of the partner countries in NDPHS.

estimates of the order of magnitude about the size of occurrence and levels of reporting and underreporting of fatal and non-fatal work related injuries in the Baltic Sea Network (BSN) countries. Two separate schemes were used for making big-picture estimations on the reliability of reporting levels of fatal and non-fatal work related injuries. In the first scheme, incidence rates of work injuries (IR) of benchmark countries were applied to the workforce of a country. The calculated numbers were then compared with the registered numbers in the official statistics. In the second scheme, the expected numbers of non-fatal work injuries were calculated by multiplying the registered number of fatal work injuries in a country by an external coefficient (ratio between fatal and non-fatal injuries) of a benchmark country.

In this study, we applied the first approach for estimating OD, using the figures of Finland as probably best in class figures (**Realloc-1 method**). The second approach of the Realloc study has been used to estimate WRD in the participating countries. The ratio between WRD and OD can be used as the coefficient for multiplication (**Realloc-2 method**). The figure on WRD of Health and Safety Executive in the UK was used to calculate the coefficient for the Realloc-2 method. After careful considerations and consultations among our country experts we concluded that the best coefficient estimate is 67 (meaning that the number of OD must be multiplied with 67 to get the estimate of WRD).

### Registration of OD in the NDPHS member countries

Taking into consideration that OD is a social-legal concept and not a pure, objectively established medical condition, there is a wide variation of reported occupational diseases in the participating countries.

Most countries officially represent the position that their own OD data are reliable. Our country experts, however, are convinced that there is a considerable underreporting in *all* European countries, except in Germany and Finland. The reported trends in the OD data differ very much in the countries covered by the present report. For the same period, some countries reported increasing OD figures, in others the trend of the data was decreasing or stable. This is worrying. We have good reasons to assume that increases and decreases of the number of recognised and reported OD do not reflect the real number of OD. They are probably caused by economic and political factors, as well as changes in the legal procedures and in the national registration systems. In the main part of the report, several options for improvement of reporting were suggested by the country experts (*rapporteurs*).

### Estimates of OD and WRD

In spite of the inherent weakness of the underlying national data, we made our own estimates for the number of OD in the participating countries. A rough estimate of the IR of OD is 5.5 cases per 10,000 workers. Rough estimates of WRD have been made on the basis of the calculated rate between OD and WRD, which resulted in a coefficient of 67, meaning that the number of OD must be multiplied with 67 to get the estimate of WRD.

### Conclusions

- The primary focus of attention in policy should be on prevention of WRD. This means a twofold shift in policy attention:
  - From OD to WRD: Only few participating countries report WRD. We need better information on WRD. Besides case reporting, we need other (epidemiological) methods to get information on WRD. However, OD is still an important concept as basis for compensation and promoting fair international competitiveness (no competition on working conditions).
  - From compensation to prevention: policy focus must be primarily on prevention, but a good practice for (fair) compensation remains important.

- When the original, official data collected from the national authorities of the region are presented on a single graph, one can clearly see that the large variations must be spurious to a very great extent (See Figure 4.1). This fact alone suggests that in this part of Europe, there has not been much improvement in data harmonization and collection since the 2003 EC/670/EC report;
- Traditional national registries of occupational diseases have major shortcomings for the provision of information for preventive policy. Therefore, direct comparisons between countries are problematic to a great extent. Trend analysis within countries, however, can be useful to evaluate preventive policy;
- Using the estimated rate between OD and WRD a coefficient can be calculated to estimate WRD in the participating countries. The calculated coefficient is 67;
- Tracing new risks and newly occurring work-related and occupational diseases require different methods, such as sentinel reporting, literature studies, expert opinions and datamining. ;
- Training and education of occupational physicians is considered an important means to improve the reporting of OD, WRD and ER by the rapporteurs; Considering the workplace as the arena of prevention, workers and their supervisors should be trained and educated in improvement of working conditions.
- International collaboration is important to be able to compare WRD between countries and to improve the knowledge on ER.;
- Collecting data on OD, WRD and ER is important for goal setting and evaluation of preventive policy. The focus should not primarily be on getting absolute numbers, rather how to use these figures the best way to support preventive projects.

### Recommendations

To achieve better prevention of health impact of work the focus of policy should be shifted from OD to WRD and from compensation to prevention. However, OD is still an important concept as the basis fair compensation.

To increase the validity of registers of OD, evidence based **case definitions** of OD are needed. Even with less reliable registries, **trend analyses** within countries can provide information on changing patterns of OD. **Sentinel surveillance projects** can improve figures of OD. Furthermore, regular **measurements of underreporting** (e.g. samples in the working population) can provide corrections for the official registries to estimate the ER of OD.

Additional methods besides recording individual cases are needed to get a better picture of WRD in a country:

**Epidemiological studies**, like cohort or case control studies, are needed to get more information on WRD. Comparisons between incidences of diseases in sectors or job titles can complement the knowledge on WRD, as well as estimates of **attributable fractions** of work for disease categories. A data linkage of **sickness absence statistics** with employment data per economic sector will provide information on the possible work-relatedness of a disease and at the same time show the magnitude of the health problem in economic context and as well as the preventive potential.

Furthermore, it is important to take into account the **impact of a disease** (health impact, economic impact, duration, etc.), e.g. in terms of epidemiological metrics like DALY's or QALY's to be able to formulate priorities in policy. If we change the focus with respect to OD and WRD **from compensation to prevention**, governments, employers and employees might be more willing to cooperate in getting a better picture of OD and WRD.

To improve the recognition, validation and sharing of information about new occupational health risks techniques such as **literature reviews**, interviews and **expert consultations** are advocated. **Sentinel reporting** is vital to demonstrate early signals of these new hazards and emerging risks. Once a suspicion of a new hazard is raised, targeted 'case-finding' may be warranted to generate a hypothesis for further research and appropriate and timely protection of workers' health (compare: pharmacovigilance methods). **Datamining techniques** can produce new possible relationships between exposures and diseases.

Rapporteurs stressed the importance to promote training and education for health professionals, employers, employees and self-employed to reduce OD, WRD and ER,

Finally, **international collaboration** is paramount in getting more insight in the pattern of OD, WRD and ER and trends therein. Modernet and the BSN network are good examples of international networks that stimulate research and development in this field.

# 1 Introduction

## Geographical scope

The overall objective of this research is to improve the understanding, identification and reporting of work-related and occupational diseases and emerging risks, in the **Northern Dimension** area. The Northern Dimension Partnership on Public Health and Social Wellbeing (NDPHS) was established in 2003. It is the co-operative effort of 9 governments, the European Commission, and 8 international organizations whose aim is to reduce both communicable and non-communicable diseases and improve social well-being. Presently, it has 7 expert groups, one of which is the Expert Group on Occupational Safety and Health, OSH EG.<sup>3</sup> All member countries of the NDPHS initiative, as well as Belarus (an observer country to NDPHS) participated in the project – altogether **10 countries**.

The present project's primary aim is to provide a better understanding of patterns of **Work Related Diseases** (WRD), **Occupational Diseases** (OD), and **Emerging Risks** (ER)<sup>4</sup> and provide information for preventive strategies at a global scale by helping the European Agency for Safety and Health at Work (EU OSHA), Eurostat, the International Labour Organization (ILO), the International Commission on Occupational Health (ICOH) and the World Health Organization (WHO).

Methodologically appropriate estimations on work-related diseases are a prerequisite for target-oriented strategies and preventive actions run by stakeholders and policy makers. Reliable recording of occupational diseases and specifically work-related diseases is a worldwide challenge, not only limited to the Northern Dimension or the EU. However, as the work is ongoing in the EU, the project will directly support the EU work, while simultaneously testing the approach in selected non-EU countries.

## Specific objectives

According to the Terms of Reference (ToR)<sup>5</sup>, the project has five specific objectives to fulfil the desired outcomes:

*1. Promote the understanding of the significance of the prevention of occupational and work-related diseases and emerging risks of reliable statistics:*

Work-related diseases are an increasing problem, and they also relate to new emerging risks. While it is known that occupational diseases are registered poorly and their definitions differ greatly among the NDPHS countries, **no NDPHS country**, except for Norway and to some extent the other Nordic countries, **collects and registers work-related diseases**. Consequently, decision making at strategical and operational levels is based on inadequate statistics.

---

<sup>3</sup> OSH EG comprises high-level experts from national ministries and agencies of Partner Countries and Organisations, OSH institutions, the research community, NGOs, and other relevant parties in Estonia, Finland, Latvia, Lithuania, Norway, Poland, Russia, and Sweden. The European Agency for Safety and Health at Work, the IOM, the ILO, and WHO are also represented. <https://www.ttl.fi/en/research-and-development-projects/expert-group-occupational-safety-and-health-osh-eg/>

<sup>4</sup> In the scientific and medical literature, the term Emerging Diseases is also widely used. In the present report, the two terms (emerging risks and emerging diseases) are used interchangeably.

<sup>5</sup> EuropeAid/132633/C/SER/multi, FWC BENEFICIARIES 2013 - Lot 8: Health, Specific Terms of Reference: Better prevention, identification and reporting of work-related and occupational diseases and emerging risks. Prevention Reporting Identification Work-Related and Occupational Diseases.

Occupational and work-related diseases and emerging risks weaken the quality of life and ability to work of the affected person. The decisions based on wrong statistics have also economic and financial effects on both society and personal level. If the criteria and importance of reliable statistics are understood, preventive actions can be directed better.

*2. Collect 1) national lists and 2) criteria for reporting of occupational and work-related diseases as well as emerging risks and describe the identification and reporting systems in the NDPHS countries:*

The fulfilment of this objective gives information on differing bad and good practices in the NDPHS countries. This can help compare country practices and differences among them. Further, it will also help to identify eventually lacking information and weaknesses in the current situation and assists in determining a common denominator of occupational and work-related diseases and emerging risks.

*3. Detect barriers to identification and reporting of work-related and occupational diseases:*

The idea is to make the obstacles to reliable registration of occupational and work-related diseases more visible. Taking into account the results of the above objectives, the compiled data will be used to create models to improve the recognition and reporting of occupational and work-related diseases and emerging risks.

*4. Develop recommendations for improved reporting systems:*

Based on the results from the actions under the above objectives, the project will develop recommendations, in line with ILO's statement on prevention of occupational diseases, to improve reporting systems for effective prevention of work-related and occupational diseases in the NDPHS member countries.

*5. Disseminate and promote the results and recommendations in the NDPHS member countries:*

Results are to be disseminated and promoted first in the participating countries, but they should also be disseminated in all EU countries and worldwide.

## Definitions

A case of **occupational disease** is defined as a case recognised by the national authorities responsible for recognition of occupational diseases. Occupational disease is a result of an exposure to risk factors arising from work activity.<sup>6</sup> Occupational disease is the causal relationship between exposure in a specific working environment or work activity and a specific disease, and the fact that the disease occurs among the group of exposed persons with a higher frequency rate than in the rest of the population or in other worker population.<sup>7</sup>

**Work-related diseases** are those health problems and illnesses, which can be caused, worsened, or jointly caused by working conditions. Work-related diseases have multiple causes, where factors in the work environment may play a role, together with other risk factors. This includes physical and psychosocial health problems. A case of work-related health problem and/or illness does **not** necessarily refer to recognition by an authority.

With respect to the term "**emerging diseases**", the following hazards are currently identified by *European Agency for Safety and Health at Work (OSHA) operating in Bilbao (Spain)*<sup>8</sup>:

---

<sup>6</sup> ILO - International Labour Organization, P155 - Protocol of 2002 to the Occupational Safety and Health Convention, 1981, 2002

<sup>7</sup> ILO - International Labour Organization, List of Occupational Diseases. Identification and recognition of occupational diseases: Criteria for incorporating diseases in the ILO list of occupational diseases, 2010. Retrieved 20 November 2013.

<sup>8</sup> <https://osha.europa.eu/en/emerging-risks>.

- Newly occurring diseases caused by risks previously unknown and caused by new processes, new technologies, new types of workplaces, or social and organisational changes. For example, nanotechnology is a key technology of the 21st century with far-reaching implications for science, industrial development and new product design. However, despite the potential adverse effects on human health, the toxicology of these nanostructured materials (*nanotoxicology*) has not been investigated sufficiently. The Compendium in Projects in the European NanoSafety Cluster gives an overview of this topic<sup>9</sup>;
- Long-standing issues such as *stress* or *bullying* are now considered as risks due to a change in social or public perceptions. Work-related stress is recognised as a major potential obstacle to productivity at the level of individuals. Moreover, several studies have revealed that cardiovascular diseases (CVD) and mental ill health are interrelated. Mental disorders can be risk factors for CVD and vice versa;
- Long-standing issues, such as *electromagnetic radiation*, are identified as a risk because of new scientific knowledge in the field. Although the occupational aspects of electromagnetic fields are undeniable, their health effects are much more debated in relation to public health policy;
- Long-standing working conditions like *night shifts* have now been shown to cause breast and prostatic cancers, most likely due to hormonal disruption.

The *ILO Encyclopaedia of Occupational Health and Safety* distinguishes three categories of occupational diseases with respect to the strength of the causal relation (Lesage, 1998).

(i) Classic occupational diseases are characterized by a clear, often practically monocausal relation to a specific exposure, for example mesothelioma caused by asbestos, or asthma caused by a specific chemical substance like methylene diphenyl diisocyanate (MDI).

(ii) If the relation is less obvious, the disease is indicated as work-related. Most musculoskeletal diseases and mental health disorders are judged as belonging to this category. Most work-related diseases are considered as multi-causal; they include work as one of the factors that play a role in the etiology. Following this line of reasoning, there is a recognizable relation between the working condition and the disease on the individual level (for example, between repetitive movements and shoulder complaints), but it is often not clear whether the working conditions are the decisive factor in the development of the disease.

(iii) Finally, a third group of diseases is distinguished in which a relation between working conditions and health effects can be demonstrated only at the population level. The incidence or prevalence of these diseases is higher in specific occupational groups, but it is difficult to substantiate the nature of the causal relation in, for example, biological terms. One reason may be the lack of specific signs to identify them as work-related. For example, cardiovascular diseases caused by shift work belong to this category.

Actually, the concept of work related diseases also comprises the first and third category of the above-cited work of M. Lesage. Within this perspective, work related diseases could be defined in this broad sense as “diseases in which the working environment contributes to the development, the aggravation and/or the continuing of a disease.” In the above-mentioned definition of occupational diseases, an occupational disease is considered as a disease which is mainly caused by exposure in the working environment (the etiological fraction of work > 50%). In practice “occupational disease” is a social-legal construct, with a different meaning in various countries. A disease is an occupational disease if it meets certain formal criteria, often summarized in a list of

<sup>9</sup> <https://www.nanosafetycluster.eu/home/european-nanosafety-cluster-compendium.html>.

occupational diseases. These lists are not only based on scientific evidence, but they also reflect the end-result of socio-political negotiations.

For most of the classic occupational diseases, there is ample evidence for the work-relatedness and they can be attributed to work with confidence in individual patients, if the workplace exposure is deemed “high enough” by the national authorities. For the category of work-related diseases, there is much more discussion regarding causal inference on the individual level. Criteria for the latter category of diseases should preferably be based on evidence from epidemiological research (Coggon, 2001). Examples are criteria developed for work-related upper-extremity musculoskeletal disorders and for work-related low-back pain (Sluiter, 2001; Kuiper, 2005). Lesage’s third category does not differ in essence from the second category, but the odds ratios or relative risks found in epidemiological studies are lower.

### International context

The participating countries in this project have to take into account their own national legislation as well as the international recommendations. All our project-participating countries should take into account ILO recommendations, but EU recommendations are relevant for the EU-countries only. Within this project Belarus, Norway and Russia are not EU countries.

According to the International Labour Organization’s Convention in 1981, all countries should maintain a registration system that is capable of providing policy-makers with information on work-related diseases and injuries. Based on the work of two meetings of experts, the ILO Governing Body approved a new list of occupational diseases on 25 March 2010 during its 307<sup>th</sup> Session. This new list replaces the preceding one in the annex of Recommendation No. 194, which was adopted in 2002<sup>10</sup>.

The more recent list includes a range of internationally recognized occupational diseases, from illnesses caused by chemical, physical and biological agents to respiratory and skin diseases, musculoskeletal disorders and occupational cancer. Mental and behavioural disorders have been for the first time included in the ILO list as a separate category. This list also has open items in all the sections dealing with the afore-mentioned diseases. The open items allow the recognition of the occupational origin of diseases not specified in the list if a link is established between exposure to risk factors arising from work activities and the disorders contracted by the worker.

The criteria used by the tripartite experts for deciding what specific diseases are considered in the updated list include the following:

- There is a causal relationship with a specific agent, exposure or work process;
- They occur in connection with a specific work environment and/or in specific occupations;
- They occur among the groups of workers concerned with a frequency which exceeds the average incidence within the rest of the population;
- There is scientific evidence of a clearly defined pattern of disease following exposure and plausibility of cause.

The EU legal framework of EU countries concerning occupational diseases is described in **Commission Recommendation concerning the European schedule of occupational diseases 2003/670/EC**<sup>11</sup>. This document published in 2003 recommends Member States to introduce national legislation on scientifically proven OD, and compensation, prevention and statistical data

<sup>10</sup> International Labour Organization. Convention concerning occupational safety and health and the working environment (C155). Adopted 22 June 1981. Available at: <http://www.ilo.org/ilolex/cgi-lex/convde.pl?C155> Accessed on 12 February 2012.

<sup>11</sup> <https://osha.europa.eu/en/legislation/guidelines/commission-recommendation-concerning-the-european-schedule-of-occupational-diseases>.

collection thereof. The basic idea behind the recommendations is that an OD, which is an administrative/judicial decision, should be connected to a “scientifically proven” evidence (whatever that might be – depending on “single case” experience to meta-analysis). Whatever the grade of the scientific evidence is, there is a good reason to treat this disease as an OD – at least for the time being. Then, this evidence is placed before the administrative/judicial system, which then decides, taking other circumstances into consideration too, whether to accept the condition as an OD or not. **Annex I** (European schedule) contains diseases that must be linked directly to the occupation. This sounds simple, but it is not. Some occupational diseases cannot be connected to a specific occupation, but to an exposure and the same exposure can be present in a variety of occupations. **Annex II** is an additional list of diseases suspected of being occupational in origin, which should be subject to notification and which may be considered at a later stage for inclusion in Annex I to the European schedule.

### Research Questions

The following research questions were deduced from the ToR:

- How are OD, WRD and ER recorded in the participating countries?
- What is the estimated incidence rate of OD and WRD in the participating countries?
- How can reporting of OD, WRD and ER be improved? (To provide policy information for decision-makers, jointly with member countries, ILO, WHO, ICOH, EU working group OCCUSTAT)?
- How can training and education of occupational health experts be improved to increase prevention and detection of work-related and occupational diseases?



## 2 Methods

### Work packages

The project is divided into three work packages (WP) to fulfil the objectives. The country experts were responsible for describing the data collection systems of work-related (WRD) and occupational diseases (OD), as well as emerging risks (ER). All NDPHS member countries and organisations as well as Belarus (an observer country) participated in the project.

The national lists and criteria for reporting of occupational and work-related diseases and emerging risks have been collected within the project. The identification and reporting systems are described, as well as barriers to identification and reporting, possibilities for an early warning system have been detected. The project also focused on the future policy-supporting surveys and research to improve statistical data collection and information. By analysing this information, the project has been able to identify gaps and create recommendations to improve reporting systems for effective prevention.

#### *WP 1: Compilation and summarizing the national situation in the participating countries concerning reporting of emerging risks, occupational and work-related diseases*

The information on the recording of emerging risks, work-related and occupational diseases in the participating countries is compiled in this work package. The following types of information have been compiled:

- lists of national legally defined occupational diseases;
- criteria for diagnostics and reporting;
- reporting methodology.

#### *WP 2: Analysis of compiled material, development of recommendations and reporting on present situation*

Work package 2 concentrates on the analysis of recognition systems in the NDPHS member countries. Recommendations have been drafted for improvement of reporting systems and for training and education of occupational health experts.

#### *WP 3: Dissemination and promotion of best practices and recommendations of the significance of the prevention of work-related and occupational diseases in a national context*

Work package 3 concentrated foremost on promoting a better understanding of the significance of prevention of work-related diseases in the NDPHS area, but also globally.

### Recruitment and instructions of the country experts

Based on their academic profile and on-the-spot work experience country experts (*rapporteurs*) were selected from 10 countries:

The **Category I expert** was responsible for the whole project and handled the project as a unity. The Category I expert has been responsible for all Work Packages and mainly responsible for development of questionnaire and pilots, data collection, estimations of occupational and work-related diseases as well as the final reporting with the major methods, results, findings and general conclusion and recommendations. He is also the convener of the joint starting seminar and project core group meetings.

Ten **Category II experts**, each representing one of the NDPHS member countries (Estonia, Finland, Germany, Latvia, Lithuania, Norway, Poland, Russia and Sweden and Belarus). Because of lacking compilation of statistics, an expert with local expertise was needed. He/she has been responsible for collecting information in the country. He/she also helped testing and validation of information to be collected, writing national answers required in questionnaire survey, reviewing, and validation the results.

All experts working under the present contract were independent and free from conflicts of interest in the responsibilities attributed to them. Requirements of the Category I and II experts were described in the ToR.

The project started with a joint starting seminar for the selected national experts (*rapporteurs*) to inform and train them on how to prepare and undertake the collection of information. During the project, several further meetings were organized with the experts to discuss methods and provisional results.

### Drafting of the questionnaire

According to the ToR, the information concerning OD, WRD and ER has been gathered by means of a questionnaire containing fixed questions, which has been developed by the service provider together with the OSH Expert Group.

We used the

- *EC Recommendation concerning the European Schedule of Occupational Diseases*<sup>12</sup> and
  - *P155 - Protocol of 2002 to the Occupational Safety and Health Convention 1981, 2002*<sup>13</sup>
- documents to design the structure of the questionnaire. These documents cover a number of topics on the recording, notification and investigation of occupational diseases, which are relevant for our study. The EC Recommendation, published in 2003 – i.e. 15 years ago (!) -, recommends Member States to introduce national legislation on scientifically proved occupational diseases, and compensation, prevention and statistical data collection thereof.

After designing, the list of fixed questions has been pre-tested in three of the participating countries: Norway, Finland and the Russian Federation. We asked the experts of these three countries to complete the questions and give their comments on feasibility and completeness of the questionnaire and to give comments on the text and contents of the questionnaire. Also, EG OSH had been asked to comment the questionnaire. The questionnaire was then adjusted based on the comments of the *rapporteurs* and EG OSH and a final questionnaire was drafted. The final questionnaire survey has been sent to the country experts in the participating countries.

### Analysis of country bases answers to the questionnaire

The first round of analysis resulted in a description of the reporting systems of the participating countries as well as a first estimate of WRD, OD and ER. A second round of analysis of replies led to guidelines for development of recommendations for improvement of reporting systems and for training and education of occupational health experts and to describe best practices.

### Estimates of OD and WRD/Identification of ER

According to the ToR, the method to collect information of **occupational diseases** was based on three pilot countries information and the survey done in all participating countries. The method used in the pilot countries needed to be aligned to the exercise that OSH EG carried out in the Realloc

---

<sup>12</sup> <https://osha.europa.eu/en/legislation/guidelines/commission-recommendation-concerning-the-european-schedule-of-occupational-diseases>.

<sup>13</sup> [http://www.ilo.org/dyn/normlex/en/f?p=NORMLEXPUB:12100:0::NO::P12100\\_INSTRUMENT\\_ID:312338](http://www.ilo.org/dyn/normlex/en/f?p=NORMLEXPUB:12100:0::NO::P12100_INSTRUMENT_ID:312338).

project<sup>14</sup> to enable comparability with previous research and demands of scientific evidence based data and information as requested in the EU OSH framework strategy. OSH EG and the service provider have jointly formulated the methodology to be able to formulate the “golden standard” to estimates of the number of occupational diseases.

### Estimating OD: alignment with the Realloc study

The Realloc study provides estimates of the order of magnitude about the size of occurrence and levels of reporting and underreporting of non-fatal work injuries in the BSN countries. The study conducted semi-quantitative data analyses of monitoring statistics that had been submitted by national authorities to the International Labour Organization during a 5-year period between 2003 and 2007.

On the basis of the finding of Eurostat that the reporting of non-fatal work injuries is nearly complete in Finland and Germany, statistical indicators from Finland, Germany, and the EU-15 average were used as benchmarks, against which the indicator data of work injuries of other countries were compared.

Two separate schemes were used for making big-picture estimations on the reporting levels of non-fatal work injuries:

- In the first scheme, incidence rates of work injuries of benchmark countries were applied to the workforce of a country. Then the calculated numbers of work injuries were compared with the registered numbers in the official statistics;
- In the second scheme, the expected numbers of non-fatal work injuries were calculated by multiplying the registered number of fatal work injuries in a country by an external coefficient (ratio between fatal and non-fatal injuries) of a benchmark country.

The first approach was a thought experiment to calculate the hypothetical number of work injuries that would be expected to occur if the whole labour force of a country were employed in a benchmark country. In the second approach, the number of fatal work injuries in a country was multiplied by a coefficient (ratio between fatal and non-fatal work injuries) from a benchmark country.

In this study, we applied the first approach for estimating OD, using the figures of Finland as probably best in class figures (**Realloc-1 method**).

### Estimating WRD

The second approach of the Realloc study was used to estimate WRD in the participating countries. The ratio between WRD and OD can be used as the coefficient for multiplication (**Realloc-2 method**). It needs to be realized that OD can be presented as a number of cases, whereas for WRD, this is more difficult. It is for example not easy to select individual cases of work related cardiovascular diseases, whereas on a population level this can be expressed as the attributable fraction of the total burden of cardiovascular diseases. This approach has been used for example in the WHO Project Global Burden of Disease<sup>15</sup>, where the attribution of several causal factors, of which work was one of them, has been expressed in DALY's. Calculations of attributable fractions or DALY's are beyond the scope of this project.

One of the few databases that collect figures on WRD is the Health and Safety Executive (HSE) in the UK. HSE provides good quality statistics on work and health. The figure of HSE in the UK can

---

<sup>14</sup> Kurppa, Severe Under-reporting of Non-fatal Work Injuries in Many Countries of the Baltic Sea Region: An exploratory semi-quantitative study, 2015.

<sup>15</sup> <http://www.healthdata.org/gbd>.

be used to calculate the coefficient for the Realloc-2 method. The total number of work related ill health in the UK is estimated at 1.3 million workers in 2016.<sup>16</sup> As the working population was 31 million workers in that year<sup>17</sup>, the percentage of the working population suffering from work related ill health is 4%. For the Finnish situation that would mean that the number of work related diseases would amount to 108,280 workers/year. The estimated number of OD in Finland is 1,489 (see Table 4.4). The coefficient is therefore:  $108,280/1,489 = 67$ .

### Identifying ER

The Consultant Team was unable to collect figures on ER, because there is no systematic recording of ER in the participating countries. Instead, we made an inventory of projects focussed on identifying ER to give recommendations for improvement of identifying ER.

---

<sup>16</sup> <http://www.hse.gov.uk/statistics/causdis/>.

<sup>17</sup> Office for National Statistics (GB): <https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/employmentandemployeetypes/bulletins/uklabourmarket/jan2017#employment>.

## 3 Registration of OD in the NDPHS member countries

### Introduction

The participating countries in this project had to take into account their own national legislation as well as the international recommendations from EU and ILO. All countries should take into account ILO recommendations. EU recommendations are relevant for the EU-countries. Within this project Belarus, Norway and Russia are not EU Member States.

National experts were asked to provide a brief description of the legal framework on registration, compensation, and prevention of occupational and work-related diseases. They were also asked to list recent changes (last 10 years) in the system in their country. In this chapter, a concise description of the legal framework of the participating countries is presented on the basis of the information provided by the *rapporteurs*. Two countries, Finland and Germany, provided a more comprehensive description of the legal system for occupational diseases and accidents. Since these countries provide high quality services in registration and prevention of occupational diseases, they can serve as a guiding example for improvement of registration and prevention.

### 3.1 Belarus

In Belarus, there is a register (list) of diseases and disorders associated with the work. It was created (revised) in 2009.<sup>18</sup> This document is waiting for a newer revision, in connection with the changes that have taken place in other documents.

#### *How the system works in practice:*

In order to establish the link between the disease and the profession, a commission is appointed composed of involved persons (specialists in occupational diseases, occupational health, occupational safety, who are engaged in performing mandatory medical examinations). Each case is dealt with by this commission. The disease has to be in the register (this is a mandatory condition). The commission draws up an emergency notice, which is sent to the employer, employee, hygiene centre and medical institution that referred the employee. Then a special document is prepared called "an act of investigating a professional disease". It is compiled by the employer, the hygiene centre, the trade unions, and the insurer in the presence of the employee. Based on the investigation, they establish the degree of guilt of the employee (it can be up to 50%), the degree of guilt of the employer, make recommendations on possible improvements in working conditions in these workplaces. If these diseases are often registered at one enterprise, the executive body compiles a protocol to the head to conduct additional preventive measures. Execution of the measures is mandatory. Furthermore, the "act of investigation of occupational disease" is sent to all involved parties (insurer, hygiene centre, employer and employee). Thereafter, the employee is sent to the Medical and Rehabilitation Expert Commission (MEDN), which determines the degree of disability (in %) and designs a rehabilitation program for the victim. These documents are transferred to the insurer, which makes the payments for disability according to the percentage of disability (one-time and monthly) and pays for rehabilitation measures according to the victim's rehabilitation program prepared by MEDN. These payments are made in

---

<sup>18</sup> [http://minzdrav.gov.by/ru/static/acts/normativnye/postanovlenia\\_ministerstva\\_ob\\_utverzhdanii\\_perechnja-spiska\\_professionalnyx-zabolevanij-i-priznanii-utrativshim-silu-postanovle](http://minzdrav.gov.by/ru/static/acts/normativnye/postanovlenia_ministerstva_ob_utverzhdanii_perechnja-spiska_professionalnyx-zabolevanij-i-priznanii-utrativshim-silu-postanovle).

accordance with the Decree of the President of the Republic of Belarus on compulsory insurance against accidents at work and occupational diseases".<sup>19</sup>

Annually, until retirement, the employee is sent to MEDN, to determine the loss of ability to work and control the implementation of rehabilitation activities. If the condition worsens, the victim may be sent ahead of schedule to MEDN for revision of rehabilitation and compensation payments. After the onset of retirement age, annual surveys are not conducted anymore and the percentage of loss is fixed lifelong. Rehabilitation programs completely compensate for treatment, hospital stay and sanatorium treatment.

Thus, all cases of occupational diseases are analysed and, on average, about 100 cases of diseases (approximately 0.25 per 10,000 workers) are registered annually in the country. In Belarus, the process of obtaining a new exposition from work recognized as the cause of occupational disease that is not listed is not going to be considered. Recognized (compensable) occupational diseases listed are only part of the work-related diseases and disorders. Particularly work-related diseases are an increasingly serious problem and is also associated with new emerging risks. In Belarus, all occupational diseases officially recognized by the commission are registered (by hygiene centres, insurer, MEDN). A number of diseases cannot be recognized as such for various reasons in Belarus and therefore the official figure is quite low compared to other countries.

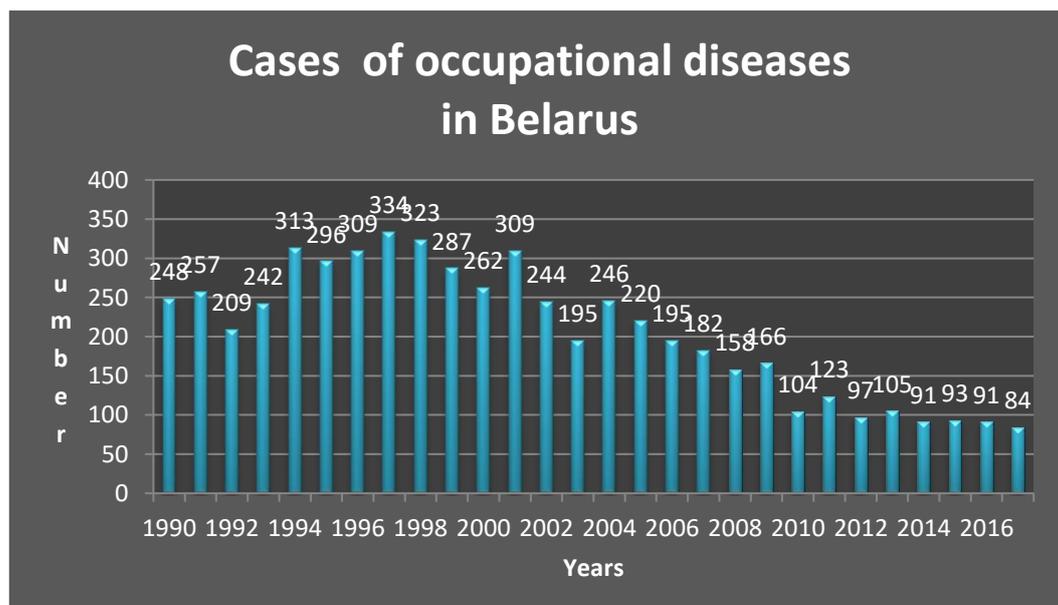
Prevention of occupational diseases takes place within the framework of the State Programs, but this is a very complex and lengthy process.

#### *Recent changes of the system:*

Legislation is supplemented and amended on some items annually. These are separate points for harmonization with the changed labour code and other documents.

#### *Trends in OD:*

Annually, the country registers an average of 100 cases of occupational diseases. There is no clear trend in the past 5 years.



<sup>19</sup> <http://bgs.by/insurance/177/>.



*Number of occupational accidents:*

Totally injured in 2015:	1524 cases
Fatal accidents:	123 cases
Serious outcome:	597 cases

### 3.2 Estonia

The legal basis for occupational health procedures is established in the “Occupational Health and Safety Act” of Estonia (OHS). Chapter 5 of this Act deals with the “Work accident and occupational sickness”.<sup>20</sup>

Paragraph 23 defines an OD as a disease which is brought about by a working environment hazard specified in the list of occupational diseases or by the nature of the work. The list of occupational diseases is maintained by the minister in charge. A work-related illness is defined as an occupational disease or an illness caused by work. An illness caused by work is an illness caused by a working environment hazard and not deemed to be an occupational disease.

A doctor who suspects that an employee is suffering from a WR illness has to refer the employee to an occupational health doctor. An occupational disease must be diagnosed by an occupational health doctor who determines the employee’s health status and gathers information concerning the employee’s current and previous working conditions. For such purpose, an occupational health doctor requires the following:

- From the employer(s) the decisions concerning previous medical examinations administered to the employee, and the results of the risk assessment of the working environment specified in § 13 (1) 3) of this Act. If work includes a period prior to the entry into force of this Act, an occupational health doctor requires a Letter of Explanation from the employer concerning the employee’s working conditions and nature of work during such period;

<sup>20</sup> Source: Occupational Health and Safety Act. Legislative Council: passed RT I 1999, 60, 616; last 12.04.2017 RT I, 28.04.2017, 1; 08.05.2017, Chpt. 5, pg 23-24 and Chpt. 51, pg 242-245  
<https://www.riigiteataja.ee/en/eli/ee/Riigikoogu/act/505052017007/consolide>.

- From an employee a statement of his/ her medical records.

An occupational health doctor informs the employer, the local office of the Labour Inspectorate and the doctor, who referred an employee to him or her of the employee's occupational disease in writing or in a format, which can be reproduced in writing no later than five days after diagnosing the disease, submitting the following information:

- the given name, surname and position of the employee;
- the date of diagnosing the illness;
- the illness and its causes;
- the employer and the employer's address.

The Labour Inspectorate forwards the statistical data on occupational diseases and illnesses caused by work in the previous year to the Health Board no later than by 1<sup>st</sup> March of each year.

The employer should exercise an investigation in which a working environment representative or, in his/her absence, an employees' trustee shall participate with the right to vote. If the employer lacks necessary knowledge, the employer should involve a competent expert in the investigation. An employer should submit a report on the investigation results to the victim or a person representing his/her interests and the local office of the Labour Inspectorate. The report indicates the measures to be implemented by the employer to prevent a similar occupational disease. The employer is obliged to register all cases of occupational disease and other illnesses caused by work and make relevant information available to a working environment specialist, working environment representative, employees' trustee and the working environment council.

The labour inspector investigates all cases of occupational disease and other occupational accidents, if necessary. A labour inspector has the right to require that an employer conduct further investigation and amend an occupational disease report, if the inspector establishes that the investigation has not been conducted or the report has not been prepared in accordance with the requirements. Information concerning investigations of occupational diseases should be archived for 55 years.

Compensation is arranged by the Social Insurance Board for material damage caused through health damage or death arising from an occupational disease. If the employer company goes into liquidation without having a legal successor, the Social Insurance Board shall compensate for the material damage.

If the worker has not reached the retirement age and if the person with an OD has been attested to have partial or no work ability (assessment of work ability is done by the Estonian Unemployment Insurance Fund) he or she will be compensated on the conditions and pursuant to the procedure provided for in the Work Ability Allowance Act. For compensation for material damage caused through occupational disease, the Social Insurance Board involves a physician to assess the loss of a person's work ability on a scale of 10–100%. This competent person, who has completed medical training, attests that the loss of work ability of a person between the age of 16 and the retirement age is:

- 100%: if following an assessment of work ability by the Estonian Unemployment Insurance Fund, it has been attested that the person has no work ability; or
- 10–90%: if following an assessment of work ability by the Estonian Unemployment Insurance Fund it has been attested that the person has partial work ability.

In summary, the OD compensation system is based on the national social security system in Estonia. There are no major differences between the compensation system of regular illnesses and

occupational diseases. Also, an employee has a right to receive compensation for damage caused to his or her health by the work to the extent provided for in the Law of Obligations Act.

#### *Recent changes of the system:*

Between 2008 and 2018, OHSA was repeatedly renewed. The last change in the OHSA was done in 2018 to improve Chapter 24 including the parts from two decrees:

- Decree on "Procedure of investigation, information and registration of WAs and ODs" (Passed first: RT I 2008, 17, 120; 19.04.2008; Passed last: RT I, 05.08.2014, 14; 01.09.2014) corrected in 2014;
- Work Ability Allowance Act. Legislative Council. Passed first: RT I, 30.12.2015, 103; 01.07.2016. Last: RT I, 28.11.2017, 31; 01.01.2018.  
<https://www.riigiteataja.ee/en/eli/502042015015/consolide>

Public health development program 2009-2020<sup>21</sup>:

- Include OH and safety topic into the teaching programs of primary and vocational education systems;
- To improve quality of organisation OH&S for better covering of OHS services for all employees;
- To perform health impact assessment studies on working and living conditions;
- To develop better collaboration between OH specialists for better prevention and treatment of ODs, regarding causal factors in work and living environment;
- To work out and implement the insurance system of work accidents and ODs for better compensation for injured workers.

Occupational health physician specialty development program 2020<sup>22</sup>:

- Based on multidisciplinary approach of OHS service a needful numbers of well-trained OH specialists could be achieved;
- Better early diagnostics of ODs and WRDs through regular health examinations;
- Better collaboration between different special institutions to attain effective rehabilitation for injured workers.

#### *Trends in OD:*

In the period 1995-1999, there was an evident increase of absolute numbers and incidence rate (IR) of musculoskeletal diseases (MSDs), but from 1999 to 2003, we can see a sharp decrease of general number and IR of ODs, and the continuing tendency to decrease of these numbers until today.

The highest number and IR of WRDs in Estonia have been registered in 2005, and these numbers show steady decrease during the last decade.

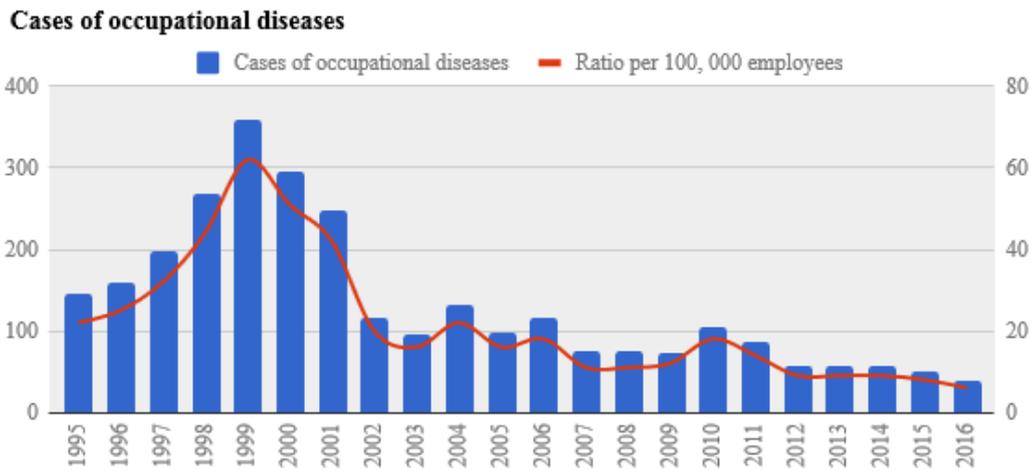
See Figures 3.1 and 3.2 for the trends in OD and WRD in Estonia.

---

<sup>21</sup> Source: Rahvastiku tervise arengukava. (in Estonian) [http://www.tai.ee/images/PDF/Rahvastiku\\_tervise\\_arengukava\\_2009-2020.pdf](http://www.tai.ee/images/PDF/Rahvastiku_tervise_arengukava_2009-2020.pdf)

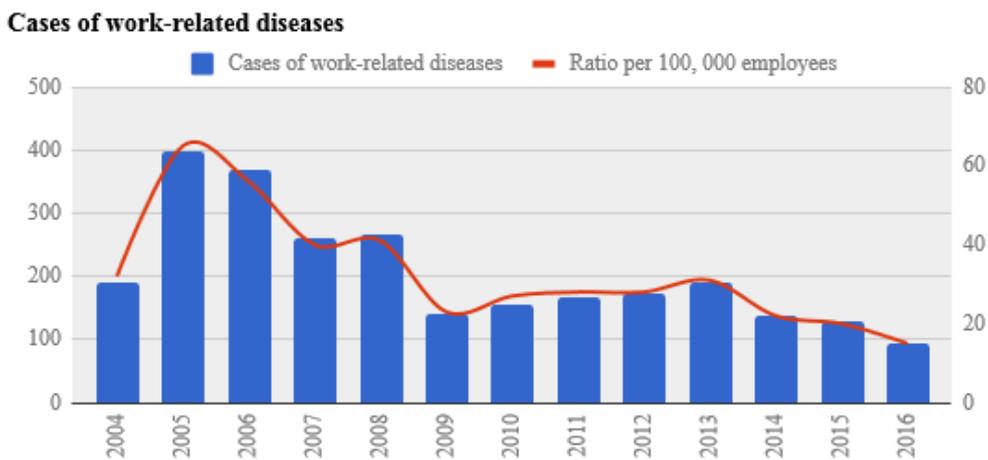
<sup>22</sup> Source: Töotervishoiuarstide eriala arengukava 2020. [https://www.sm.ee/sites/default/files/content-editors/eesmargid\\_ja\\_tegevused/Tervis/Tervishoiustuseteem/Arstide\\_erialade\\_arengukavad/tootervishoid\\_arengukava.pdf](https://www.sm.ee/sites/default/files/content-editors/eesmargid_ja_tegevused/Tervis/Tervishoiustuseteem/Arstide_erialade_arengukavad/tootervishoid_arengukava.pdf).

Figure 3.1 Number of Cases and Incident Rates of OD in Estonia



Source: National Labour Inspectorate.

Figure 3.2 Number of Cases and Incident Rates of WRD in Estonia

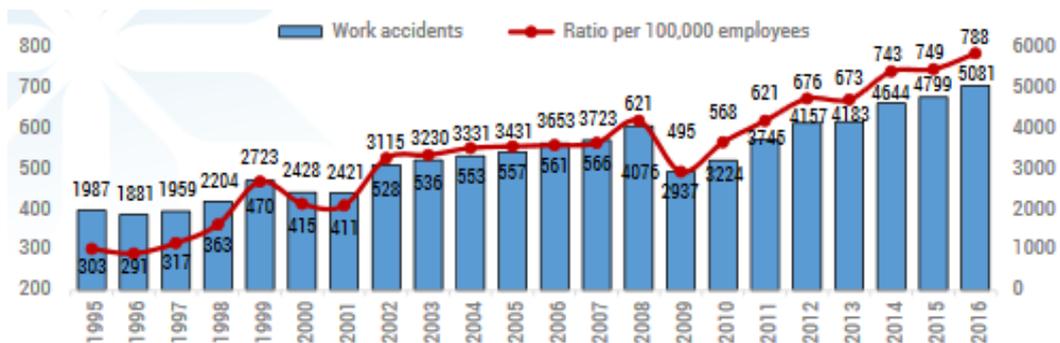


Source: National Labour Inspectorate.

*Number of occupational accidents:*

Work accident statistics is based on work accident reports by employers. In the period 1995-2016, we can see significant increase of absolute numbers as IR (per 100,000 workers) in the last twenty years (Fig. 3.3).

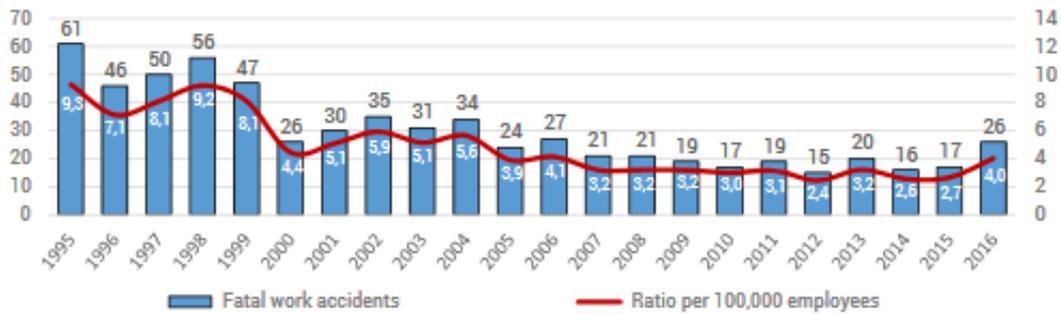
Figure 3.3 Number and incidence rate of work accidents in Estonia



Source: National Labour Inspectorate.

In the period 1995-2016 the absolute numbers and rate of fatal accidents per 100,000 employees show steady tendency to decrease, fluctuating from 15 to 27 cases per 100 000 workers in the last decade (Fig 3.4).

Figure 3.4 Number and incidence rate of fatal work accidents in Estonia



Source: National Labour Inspectorate.

However, the number of officially reported work accidents is estimated to be lower than the actual number of accidents (Annual report 2016, Labour Inspectorate, 2016).<sup>23</sup>

### 3.3 Finland

The Finnish social security is based on the insurance system. Public social insurance covers different elements of social security, such as a flat-rate national pension insurance, sickness insurance and unemployment insurance. These insurances are operated by the Social Insurance Institution of Finland (Kela). Kela is an independent social security institution with its own administration and finances, and it is supervised by the Finnish Parliament.<sup>24</sup>

Work pension insurance is obligatory for the employers, and it is operated by mutual pension funds governed by the social partners' organizations. Insurance for occupational accidents and occupational diseases is operated by private insurance companies under supervision by the Ministry of Social Affairs and Health. There are also other legally obligated insurances, which are partly relevant for workers' protection, for example, in the transport sector (Rantanen, 2016). According to the safety legislation, the employer is obliged to ensure health and safety at work. A part of the realization of this principle is the duty to compensate for loss of earnings, health care costs, and disability due to an occupational accident or disease. In order to bear this responsibility, employers are obliged to insure their employees against these (Rantanen, 2016).

As part of the Finnish social insurance system, the workers' compensation insurance is included in the statutory social security for employees. The workers' compensation insurance system takes precedence over other social security benefits. The workers' compensation insurance system is based on the new Workers' Compensation Act (no. 459/2015 in the Statutes of Finland, abbreviated TyTAL)<sup>25</sup> which contains provisions on a number of matters, such as compensable claim events, benefits covered by the insurance policy, implementation of the insurance system and the premium principles. TyTAL entered into force on 1<sup>st</sup> January 2016, combining the provisions of three acts valid at the time: Employment Accidents Insurance Act (608/1948), Occupational Diseases Act (1343/1988) and Act on rehabilitation compensable under the Employment Accidents Insurance Act (625/1991; the Rehabilitation Act).

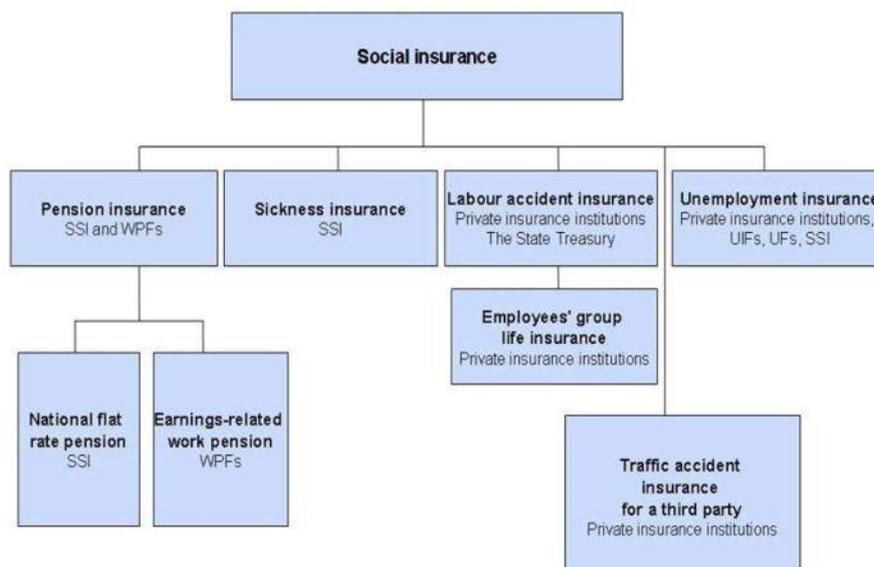
<sup>23</sup> <http://www.ti.ee/en/media-publications-statistics/statistics/work-accidents-occupational-diseases-work-related-diseases-in-the-republic-of-estonia-in-1995-2017/>

<sup>24</sup> See more at: <http://www.kela.fi/web/en>.

<sup>25</sup> See the unofficial translation into English at <https://www.alandia.com/file/520>.

As part of the social insurance system (Fig. 3.5), the Finnish system of occupational accident insurance is controlled by the Ministry of Social Affairs and Health<sup>26</sup>, which has a special Insurance Department. The Ministry controls the activities of insurance institutions that deal with occupational accidents and diseases. The insurance companies must have a licence granted by the Government. In practice, the companies operate very independently, and the control of the Ministry focuses on the economic stability of the companies, on the legal aspects of their operation and on the legal aspects and fairness of compensation (Rantanen, 2016).

**Figure 3.5 Social security system in Finland**



Source: Ministry of Social Affairs and Health

Notes: SSI = social security institution, Kela; WPF = work pension fund; UIF = unemployment insurance fund; UF = unemployment fund (Rantanen, 2016).

Finnish Workers' Compensation Centre (TVK)<sup>27</sup> is a coordinating body for insurance institutions dealing with statutory accident insurance. TVK has a broad remit, including development of the statutory accident insurance and its implementation system and promotion of cooperation between the various parties involved and the system, and also improvement of the coherence of the compensation system. TVK is a liaison organisation for insurance companies, compiles statistics on occupational accidents and occupational diseases together with their causes and consequences, and helps to prevent occupational accidents and diseases. TVK's duties also include paying compensation for occupational accidents in cases where the work being done is not subject to insurance.

Membership in TVK is obligatory for the insurance institutions. At present, the Centre has 12 insurance company members plus the Farmers' Social Insurance Institution and the State Treasury, which is responsible for the compensation of occupational accidents and diseases in the Government sector. TVK is governed by a General Assembly and Board, with membership from the insurance institutions and the organizations of the social partners.

### Registration

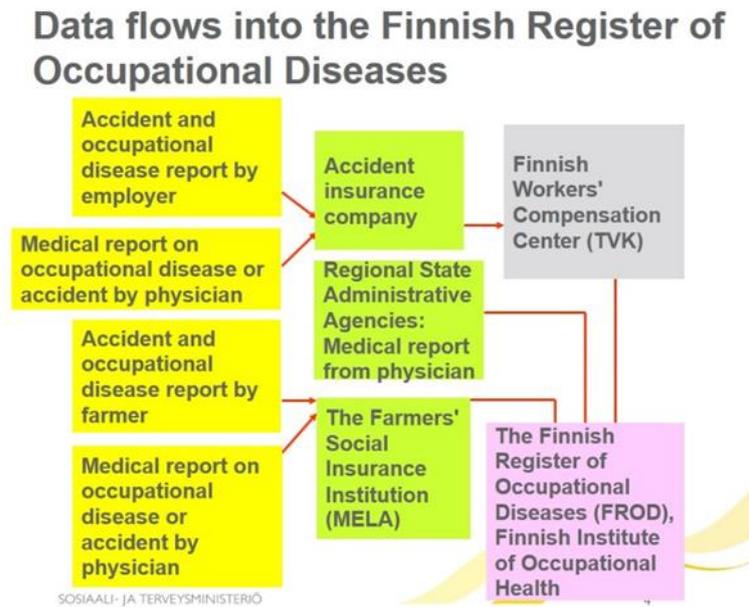
Figure 3.6 describes the data flow of registration of occupational diseases in Finland. An occupational disease is defined as a disease likely to have been caused principally by a physical,

<sup>26</sup> See more at: <http://stm.fi/en/>.

<sup>27</sup> See more at: <http://www.tvk.fi/en/>.

chemical or biological factor at work. Illnesses due to psychological factors are not compensable as occupational diseases in Finland (Sauni 2017).

Figure 3.6 Data flows into the Finnish Register of Occupational diseases<sup>28</sup>



The Occupational Disease Decree in Finland (769/2015) contains a list of the most common illnesses considered to be occupational diseases and the factors causing them, i.e. the exposure agents. The list is neither exhaustive nor limitative, and even illnesses not referred to in the Decree can be compensable as occupational diseases, if causality between the illness and an exposure factor defined in the legislation and present at work can be established with sufficient probability. The most common occupational diseases include acoustic traumas, respiratory allergies, skin diseases, asbestos illnesses and strain injuries in upper limbs.

The reporting procedure is generally based on doctors, who are required to report all cases of diseases, which could be related to an occupational exposure. An occupational disease is compensable by the insurance company underwriting the workers' compensation insurance, provided by the employer at the time when the occupational disease manifested. On the date of manifestation, if the injured person is no longer performing the work that may have caused the occupational disease, compensation liability is determined on the basis of the work in the course of which exposure primarily occurred.

The Finnish Institute of Occupational Health publishes annual statistics on *compensated* occupational diseases and illnesses *suspected* to be occupational diseases. Since 1964, data on occupational diseases and illnesses suspected to be occupational diseases has been collected into the Finnish Register of Occupational Diseases (FROD) from the Finnish Workers' Compensation Centre (TVK) and from the Farmers' Social Insurance Institution (MELA). Also, the reports delivered by medical doctors to the Regional State Administrative Agencies are used in the statistics in order to have more complete descriptions about the illness cases. This information is used especially in respiratory allergies and in skin diseases (Oksa et al, 2016).

#### Compensation:

The Workers' Compensation Act covers the following events:

- A. Occupational accidents occurring:

<sup>28</sup> Sauni 2017.

1. on the job;
  2. in conditions resulting from the job (a) at the workplace or in an area belonging to the workplace (b) on the way to or from work (c) when the employee is running an errand for his employer;
  3. if the employee attempts to protect or save his employer's property or human lives in connection with his work.
- B. Occupational diseases defined by the Act on Occupational Diseases;
- C. Injuries caused by specially defined physical strain or other unfavourable ergonomic conditions at work. The scope of compensation by occupational accident insurance is very broad, and the level of compensation is relatively high, practically resulting in full 100% compensation of all costs caused by the accident or occupational disease and the loss of earnings and, if needed, also the temporary or permanent loss of working capacity. The appropriate diagnosis and treatment, as well as rehabilitation for occupational injuries and occupational diseases are compensated. Pensions for loss of work ability will be paid to the insured employee and, in the case of fatal injuries and diseases, to the survivors.

#### *Prevention:*

The major Occupational Safety and Health laws are:

- The Occupational Safety and Health Act (738/2002);
- The Act on Occupational Safety and Health Enforcement and Cooperation on Occupational Safety and Health at Workplaces (44/2006);
- The Act on Occupational Health Services (1383/2001);
- Legislation on occupational accidents and occupational diseases: Workers' Compensation Act (no 459/2015).

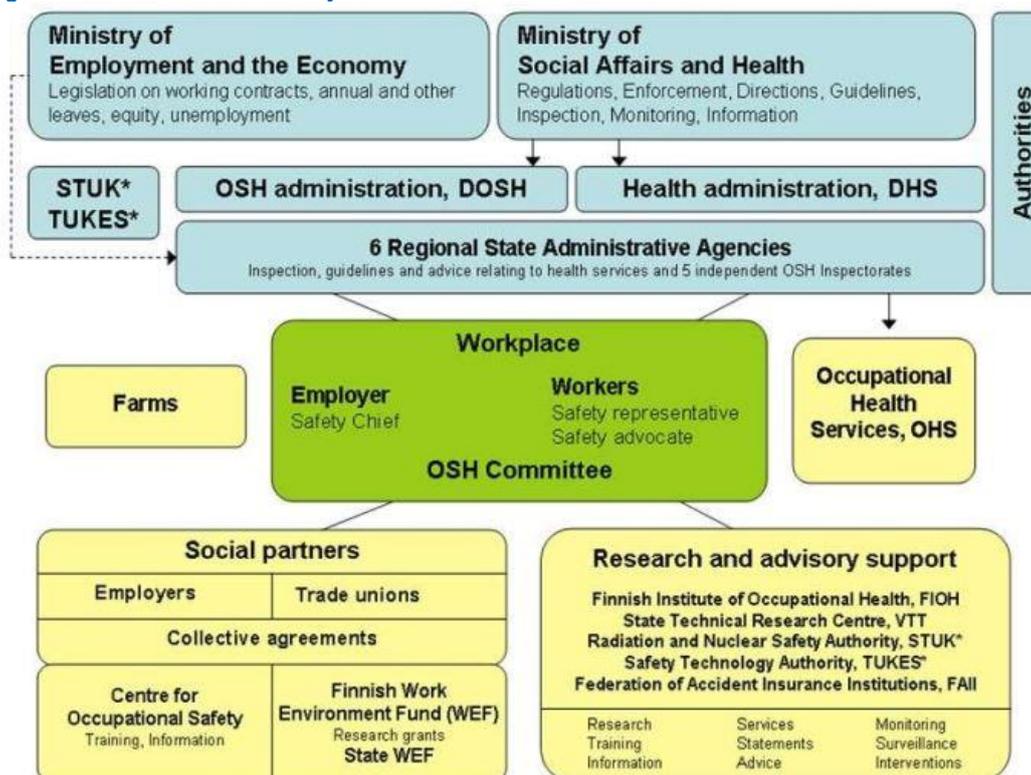
Workplace and health, safety at work and workers' health and well-being are the centre of the Finnish OSH system. Taking into consideration the 363,000 enterprises and 230,000 workplaces and 2,630,000 employees the Finnish OSH system has a wide field to cover. The OSH sector is also a field of multiple actors and therefore inter-sectorial, interagency and multidisciplinary collaboration is of high importance at all levels of activity. The complex structure of OSH system in Finland is presented in Fig. 3.7 (Rantanen, 2016).

The accident insurance institutions also provide advisory services for the prevention of accidents and may, if needed, provide consultations for employers on how to improve safety. Particularly for employers with high numbers of workers, the experience-based premium tariffing provides an incentive for prevention. The overall description of the Occupational Safety and Health System is given in the brochure published by the Ministry of Social Affairs and Health.<sup>29</sup>

---

<sup>29</sup> Brochure is available at: [http://stm.fi/documents/1271139/1332445/STM\\_esite\\_Tyosuojelu\\_suomessa\\_verkkoonUK.pdf/a2bd9c8c-6de8-43c7-8516-c149840498e1](http://stm.fi/documents/1271139/1332445/STM_esite_Tyosuojelu_suomessa_verkkoonUK.pdf/a2bd9c8c-6de8-43c7-8516-c149840498e1) See also: [https://oshwiki.eu/wiki/OSH\\_system\\_at\\_national\\_level\\_-\\_Finland](https://oshwiki.eu/wiki/OSH_system_at_national_level_-_Finland).

Figure 3.7 The structure of OSH system in Finland<sup>30</sup>



#### Recent changes of the system:

The legislation on insurance of occupational accidents and diseases was totally renewed from the 1<sup>st</sup> January 2016. However, the changes were mainly targeted to organisational matters of insurance, and the principles of registration, compensation and prevention remained unchanged.

#### Trends in OD:

In 2014, a total of 4,338 occupational diseases or suspected cases of occupational diseases were recorded in the Finnish Institute of Occupational Health's Register of Occupational Diseases (17.7 cases /10,000 people employed) together with 1,616 recognized occupational diseases (6.6 cases /10,000 people employed). The number of recorded occupational diseases and suspected cases of occupational diseases was 6% less and the number of recognized occupational diseases 11% less than in 2013. In 2012–2014, the numbers of cases have remained at a fairly stable level.

#### Number of occupational accidents:

In the year of 2014, there were 123,849 occupational accidents, of which 66.9% happened to men (Statistics Finland).

### 3.4 Germany

Most elements of the current German social security system were developed under the *aegis* of Chancellor Bismarck. The first legislative measures of OSH (1839), to contain the negative effects of the Industrial Revolution and to ensure a healthy working population and social stability and internal peace, were adopted at that time. The German social security system is comprehensive, consisting of the classical five pillars of health, pension, accident, long-term care and unemployment insurance, and covers more than 90% of the population.

<sup>30</sup> Source: Rantanen 2016.

Five insurances are mandatory within the social security system:

- Unemployment insurance (Arbeitslosenversicherung);
- Pension insurance (Rentenversicherung);
- Long term care insurance (Pflegeversicherung);
- Health insurance (Krankenversicherung);
- Accident insurance (Unfallversicherung).

All insurance schemes are funded jointly by employers and employees with the exception of the statutory accident insurance, which is funded exclusively by the employers according to a bonus-malus-scheme (incentive). Injured employees are immediately covered and eligible for compensation even without a valid employment contract.

### *OSH Legislative Framework*

The German legislative OSH framework is characterised by the influence of European directives. The EC Directives are transposed into national legislation, taking into account national conditions and prior existing legislation. The German national regulations and acts are then concretized by ordinances, issued by the Labour Ministries at Federal and/or State level, and also by the accident prevention regulations of the social accident insurance institutions. Technical rules and standards complement national regulations on a voluntary basis.

In line with the federal structure and the dual OSH system, legislative and executive are divided among the key stakeholders as follows:

- Legislation: Health and safety at work are administered by the Ministries for Labour and Social Affairs at both federal (Bundesministerium für Arbeit und Soziales, BMAS) and at state level, reflecting the federal structure of Germany. Legislation, drafted by the Federal Government and approved by the Parliament (Bundestag) has to be confirmed by the Federal Council (Bundesrat), representing the 16 Federal States (Bundesländer);
- Surveillance and enforcement of compliance with federal law and ordinances: The State labour inspection authorities are responsible for implementing OSH legislation at State level under the State Ministries for Labour and Social Affairs. The OSH supervision of the mining industry is historically separated from the inspection of all other types of industry. Coordination between the different states is ensured through common legislation and through their common platform, the Commission for Occupational Safety and Health (LASI);
- Surveillance and enforcement of compliance with the accident prevention regulations: The Social accident insurance institutions are obliged by law to adopt accident prevention regulations, which are developed by expert committees and approved by the BMAS. The implementation of accident prevention regulations at enterprise level is supervised by the technical inspection services of the accident insurance institutions;
- Both inspection services are required to coordinate their services (dual OSH System).

Figure 3.8 Institutional framework of the German dual OSH system



Source: Federal Institute for Occupational Safety and Health

Most pertinent for the prevention of OD's and work-related ill health are the following:

- Occupational and Safety Act (Arbeitsschutzgesetz, ArbSchG) i.e. the transposition of the European OSH framework directive 89/391/EEC of 12 June 1989 on the introduction of measures to encourage improvements in the safety and health of workers at work, as well as the transposed so-called Daughter Directives. It defines the basic OSH principles and OSH measures for the employer and employees;
- § 20 a ArbSchG institutionalizes the Joint German Occupational Safety and Health Strategy (Gemeinsame Deutsche Arbeitsschutzstrategie, GDA);
- The Act on Occupational Physicians, Safety Engineers and other OSH Professionals/ Occupational Safety Act (Gesetz über Betriebsärzte, Sicherheitsingenieure und andere Fachkräfte für Arbeitssicherheit, Arbeitssicherheitsgesetz, ASiG) is the legal basis for occupational physicians (Betriebsärzte, Werksärzte) and OSH professionals (Fachkräfte für Arbeitssicherheit). Together with the corresponding accident prevention regulations of the statutory accident insurance institutions, the law sets out the duties of employers regarding the provision of OSH, including the minimum annual working time of occupational physicians and safety specialists for enterprises of various sizes and in various sectors;
- Book VII of the German Social Code - Accident Insurance (Siebtes Buch Sozialgesetzbuch - Gesetzliche Unfallversicherung, SGB VII) is the legal basis for all social accident insurance activities. § 20 SGB VII regulates the cooperation with third parties such as the labour inspection authorities (Dual System) and the coordinated cooperation in the framework of the National Occupational Safety and Health Conference (Nationale Arbeitsschutzkonferenz, NAK), the central decision-making body of the Joint German Occupational Safety and Health Strategy (Gemeinsame Deutsche Arbeitsschutzstrategie, GDA);
- The Ordinance on Occupational Diseases (Berufskrankheitenverordnung, BeKV) contains in Annex the German List of Occupational Diseases. The list is regularly updated in response to new scientific evidence. In July 2017 five new ODs were included (list numbers 1320, 1321, 2115, 4104 and 4113);
- The Ordinance on Notification of Accidents and Occupational Diseases to the Accident Insurance (Unfallversicherungs-Anzeigeverordnung) regulates the content and form of notifications to the applicable accident insurance institution as well as the related electronic data transmittance;
- The Preventive Health Care Act (Präventionsgesetz, PräVG) of 2015 strengthens the basis for enhanced cooperation among the statutory social security institutions, the federal states and the

local authorities in the areas of prevention and health promotion for all age-groups and in multiple life settings (nursery schools, schools, workplaces, nursing homes). The Act relies on the targeted co-operation of those involved in prevention and health promotion. Alongside the statutory health insurance, the statutory pension insurance and the statutory accident insurance, the statutory long-term-care insurance and the private health insurance will also be involved. Within the context of a National Prevention Conference, the social security institutions, with the participation, especially of the Federal Government, the federal states, the local authorities, the Federal Employment Agency and the social partners, will identify joint goals and agree on a joint approach.

#### *National Strategy on Occupational Safety and Health*

The Joint German Occupational Safety and Health Strategy (Gemeinsame Deutsche Arbeitsschutzstrategie, GDA) was established in November 2008 by changes to the Occupational Safety Act and the Book VII of the German Social Code. The GDA is jointly supported by the German government (Federal Ministry of Labour and Social Affairs, BMAS), the 16 Federal States (Länder) and the accident insurance institutions. The strategy forms the basis for action in order to attain jointly established OSH objectives.

The overall goal of the GDA is to maintain, improve and promote safety and health of workers by means of the efficient and systematic implementation of OSH, including workplace health promotion measures. In addition, the awareness of safety and health among employers and workers should be strengthened by the GDA. Reducing accidents at work and work-related illnesses save money at microeconomic and macro-economic level. Occupational Safety and Health measures are intended to promote positive changes, not to hinder them. Against this background, the Joint German OSH Strategy is meant to contribute to:

- Maintain and strengthen employability, including the promotion of lifelong learning;
- Support general health objectives;
- Relieve the social insurance systems; and
- Increase the competitiveness of companies.

Core elements are as follows:

- the development of common objectives in the field of OSH;
- the elaboration of common fields of action and work programmes and their implementation according to consistent principles;
- the evaluation of these objectives, joint fields of action and work programmes;
- the improvement of the cooperation and coordination of the actions of the institutional OSH stakeholders (BMAS, federal states and social accident insurance);
- the establishment of a transparent, appropriate and user-friendly set of provisions and regulations.

Figure 3.9 Collaborative structure of GDA and NAK in Germany



Source: Federal Institute for Occupational Safety and Health

The National Occupational Health and Safety Conference (NAK) is the central body for planning, coordination, evaluation and decision-making in the framework of the joint German OSH strategy. Its members are the Federal Government, the State Government and the accident insurance institutions. The social partners participate in the NAK meetings, acting as advisors in developing OSH objectives. The systematic dialogue between the partners of the joint German OSH strategy and all relevant stakeholders is conducted in the Occupational Health and Safety Forum (Arbeitsschutzforum), whose task it is to advise the NAK. Participants in the Forum are the social partners, professional and industrial associations, health insurance and pension insurance funds, national networks in the area of OSH and representatives of the corresponding academic world.

The programmatic priorities up until now are as follows:

*Work program 2008 – 2012:*

- Reduction of the frequency and severity of occupational accidents;
- Reduction the musculoskeletal workload and diseases;
- Reduction of skin diseases.

*Work program 2013 – 2018:*

- Improvement in the organisation of company occupational safety and health;
- Reduction in work-related health hazards and musculoskeletal disorders;
- Protection and strengthening of health in the case of work-related mental load.

The subordinated work programs, developed from these overall joint objectives, are evaluated and used as a basis for program adaptation and further action. The evaluation concept, methods and instruments are available from the GDA website as well as an interim evaluation report on the period 2008-2012.

The National Occupational Health and Safety Conference (NAK) cooperates with the National Prevention Conference (NPK) within the framework of the Preventive Health Care Act. The goals of

the GDA are to be considered for the goal "healthy living and working" in the Preventive Health Care Act.

#### *Further related Federal projects and initiatives*

Model program to fight against work-related diseases (Modellprogramm zur Bekämpfung arbeitsbedingter Erkrankungen).

The program was initiated by the Federal Ministry of Labour and Social Affairs in 1993 in order to support preventive activities with transferable model character especially in and for smaller enterprises. In recent years, the program is more and more merging with the INQA initiative.

The New Quality of Work Initiative (Initiative Neue Qualität der Arbeit, INQA) is a joint undertaking of the federal government, state governments, social insurance partners, social partners, foundations and enterprises. It was launched in 2001 by the Federal Ministry of Labour and Social Affairs. The initiative addresses a broad spectrum of tasks arising from the current challenges at work (global competition, ageing workforce, maintenance of employability, life-long learning, increase of work-related diseases, Industry 4.0). The projects and initiatives include topics such as corporate culture, work organization, life-long learning, psychosocial stress, diversity, good practice transfer and sustainability among others.

#### *Recent changes of the system:*

Occupational accidents and diseases and all related OSH matters are administered under the Ministry of Labour and Social Affairs, while all other accidents and diseases are dealt with under the Ministry of Health. It is obviously easier to relate matters, if all ill health is treated under the responsibility of the same Ministry. This applies to research into causes as well as to intervention and program funding. The increase of work-related diseases and mounting cost of sickness absence and of early retirement pensions, both largely due to musculoskeletal diseases or psychosocial disorders, has highlighted the need for closer cooperation of all relevant stakeholders.

Loose cooperation schemes and initiatives on federal, regional or sectoral basis from the 1990s onwards have finally resulted in nationwide programs that were coordinated and solidified in legislation.

Relevant changes in legislation are the following:

- Act on the Modernization of the Statutory Accident Insurance (Gesetz zur Modernisierung der gesetzlichen Unfallversicherung – Unfallversicherungsmodernisierungsgesetz, UVMG; enacted: 30<sup>th</sup> October 2008; in force: stepwise since January 2009, last amendments starting from 1<sup>st</sup> January 2013). The Act regulates among others the reorganization of originally 35 industrial accident insurances to nine (BG), and for the public sector to 17 accident insurances (UK);
- Occupational and Safety Act (Arbeitsschutzgesetz, ArbSchG). The Act is the transposition of the European OSH framework directive 89/391/EEC of 12 June 1989. The Act was amended on 5 November 2008 by adding § 20 for the institutionalization of the Joint German Occupational Safety and Health Strategy (Gemeinsame Deutsche Arbeitsschutzstrategie, GDA). The GDA is a permanent codified alliance of federal Government, regional governments and accident insurance institutions, consulted by representatives of social partners, universities and research institutions, and has a permanent secretariat at the Federal Institute for Occupational Safety and Health (BAuA). The partners meet and decide on the national planning, coordination, execution and evaluation of OSH measures, and regularly exchange information with social insurance institutions, professional associations, institutes and university departments dealing with or training in OSH and other stakeholders;

- Book VII of the German Social Code - Accident Insurance (Siebtes Buch Sozialgesetzbuch - Gesetzliche Unfallversicherung, SGB VII);
- The Code was amended in parallel with the Occupational and Safety Act in 2008 in order to pave the way for coordinated cooperation with Third parties such as the labour inspection authorities (Dual System) and to enable coordinated cooperation in the framework of the National Occupational Safety and Health Conference (Nationale Arbeitsschutzkonferenz, NAK), the central decision-making body of the Joint German Occupational Safety and Health Strategy (§ 20 SGB VII);
- Preventive Health Care Act (Präventionsgesetz, PräVG; enacted: 15<sup>th</sup> July 2015; in force: stepwise 18<sup>th</sup> July 2015 until 1<sup>st</sup> January 2016);
- The Act strengthens the basis for enhanced cooperation among the statutory social security institutions, the federal states and the local authorities in the areas of prevention and health promotion for all age groups and in multiple life settings (nursery schools, schools, workplaces, nursing homes). The Act relies on the targeted cooperation of those involved in prevention and health promotion. Alongside the statutory health insurance, the statutory pension insurance and the statutory accident insurance, the statutory long-term-care insurance and the private health insurance will also be involved. Within the context of a National Prevention Conference, the social security institutions, with the participation, especially of the Federal Government, the federal states, the local authorities, the Federal Employment Agency and the social partners, will identify joint goals and agree on a joint approach;
- The Ordinance on Occupational Diseases (Berufskrankheitenverordnung, BeKV) contains in Annex the List of Occupational Diseases. The List is regularly updated as advised by scientific evidence (Expert Council at the BMAS).

The following changes were introduced in recent years.

Amendments of 11 June 2009:

- 1318: Diseases of blood, blood generating and lymphatic system caused by Benzene;
- 2112: Osteoarthritis of the knee caused by kneeling or comparable knee straining activities with a cumulative exposure period in the whole working life at least of 13 000 hours and a minimum exposure time per shift of 1 hour;
- 4113: Lung cancer caused by polycyclic aromatic hydrocarbons if there is evidence of exposure to a cumulative dose of generally 100 Benzo[a]pyrene years [ $(\mu\text{g}/\text{m}^2) \times \text{years}$ ];
- 4114: Lung cancer caused by simultaneous exposure to asbestos fibre dust and polycyclic aromatic hydrocarbons if there is evidence of exposure to a cumulative dose corresponding to a causative probability of at least 50%;
- 4115: Lung fibrosis caused by extreme and long-lasting exposure to welding fumes and gases (Siderofibrosis).

Amendments of 22 December 2014:

- 1319: Larynx cancer caused by intensive and long-lasting exposure to aerosols containing sulphuric acid;
- 2113: Pressure damage of the N. medianus in the carpal tunnel (Carpal tunnel syndrome) caused by repetitive manual activities with bending and stretching of the wrist, by increased hand effort or by hand-arm-vibration;
- 2114: Vascular damage of the hand caused by repetitive trauma (Hypothenar-Hammer-Syndrome and Thenar-Hammer-Syndrome);
- 5103: Squamous cell carcinoma or multiple actinic keratosis of the skin caused by natural Ultraviolet Radiation.

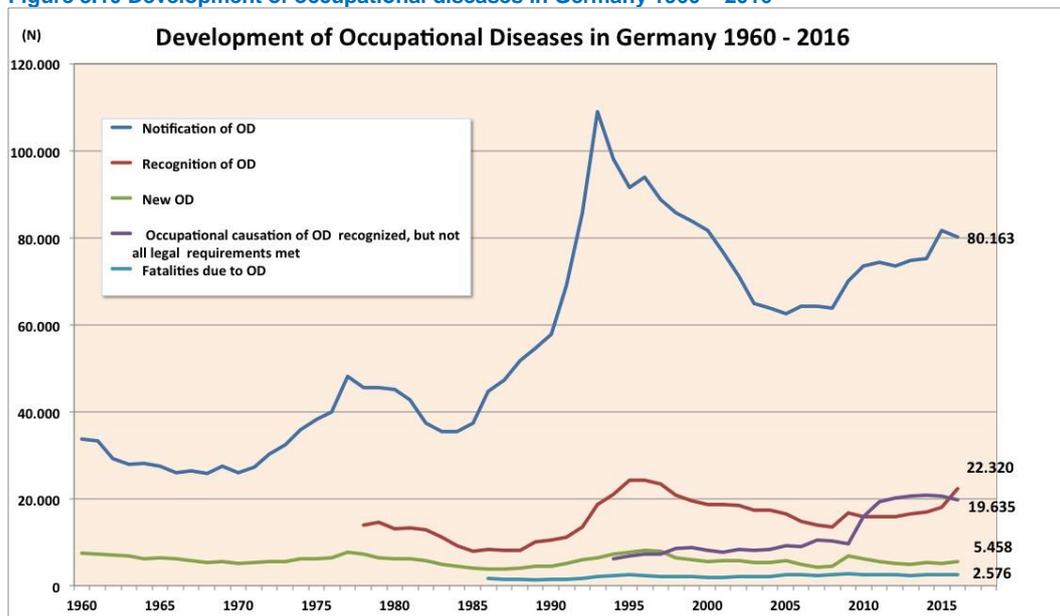
Amendments of 10 July 2017:

- 1320: Chronic myeloid or chronic lymphatic leukaemia caused by 1,3-Butadien if there is evidence of exposure to a cumulative dose of at least 180 Butadien years (ppm x years);
- 1321: Mucosal lesions, carcinoma or other neoplasm of the urinary tract caused by polycyclic aromatic hydrocarbons if there is evidence of exposure to a cumulative dose of at least 80 benzo(a)pyrene years [(µg/m³) x years];
- 2115: Focal dystonia of the central nervous system in musicians caused by fine motor activity of high intensity;
- 4101: Addition: Ovarian cancer (caused by Asbestos);
- 4113: Addition: Larynx cancer (caused by polycyclic aromatic hydrocarbons).

*Trends in OD:*

The overall trend is available from the graphs on the development of occupational diseases and on the most often reported notifications and recognitions<sup>31</sup> (Fig. 3.10 for OD). There was a steep rise of notifications (dark blue line) and recognitions (red line) following the German reunification.

**Figure 3.10 Development of occupational diseases in Germany 1960 – 2016**



*Number of occupational accidents:*

See Table 3.1 for the number of occupational accidents in Germany.

**Table 3.1 Notifiable occupational accidents**

2015 Cases		2014 Cases		2013 * Cases	
Absolute numbers	per 1,000 fulltime workers*	Absolute numbers	per 1,000 fulltime workers*	Absolute numbers	per 1,000 fulltime workers*
944,744	23.254	955,919	23.728	959,143	23.9

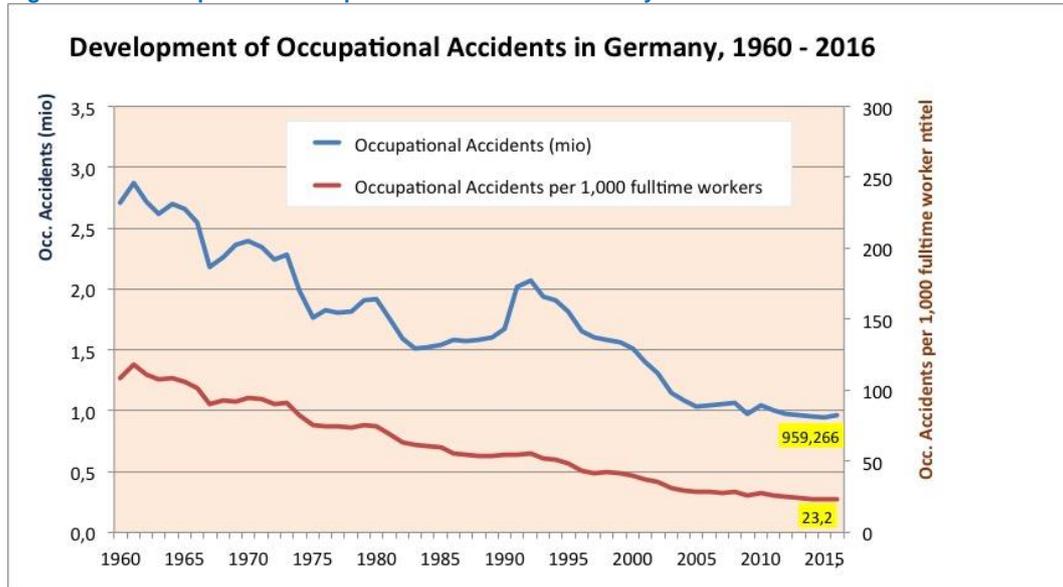
\* Agricultural occupational accidents are not included.

\*\* The term "fulltime worker" is an artificial term used for statistical purposes in order to take into account the variation in working time schedules of employment (fulltime, part-time, overtime etc.). Working time hours are summed up and adjusted to fulltime work.

<sup>31</sup> Bundesministerium für Arbeit und Soziales: Sicherheit und Gesundheit bei der Arbeit 2015 – Unfallverhütungsbericht Arbeit. Available from: [https://www.baua.de/DE/Angebote/Publikationen/Berichte/Suga-2015.pdf?\\_\\_blob=publicationFile&v=5](https://www.baua.de/DE/Angebote/Publikationen/Berichte/Suga-2015.pdf?__blob=publicationFile&v=5). Accessed: 2017-11-24.

The figures are extracted from the annual reports Health and Safety at Work 2013, 2014, 2015 of the Federal Ministry of Labour. They include for 2014 and 2015 all sectors (industry, public, agriculture).<sup>32</sup> Gender distribution is not available.

Figure 3.11 Development of occupational accidents in Germany 1960 – 2015



Remark: The number of occupational accidents is steadily decreasing. The steep rise in 1991 is explained by the German reunification.

### 3.5 Latvia

In Latvia, the System for Occupational Safety and Health at work is primarily set by the main legal document, the Labour Protection Law. The Labour Protection Law transposes into Latvian legal system the requirements of framework Council Directive 89/391/EEC of 12 June 1989 on the introduction of measures to encourage improvements in the safety and health of workers at work. Under Labour Protection Law, there are more than 20 different Regulations that explain into detail particular requirements that are foreseen by the Labour Protection Law. These regulations are issued by Cabinet of Ministers as Latvian legal system has been built in the way that general (framework) legal requirements are adopted by Parliament (Saeima) and are then brought into practice by Regulations adopted by Cabinet of Ministers containing more explicit explanations of requirements. Some regulations are issued based on requirements of Labour Law, e.g. requirements towards child labour etc.

Labour Protection Law applies to any “employer” – person that is employing at least one employee without restriction to size, ownership or industrial branch of the undertaking. The main purpose of the Labour Protection Law is to guarantee and improve safety and health protection of employees at work by determining obligations, rights and mutual relations regarding labour protection between employers, employees and their representatives as well as State institutions.

There are, of course, several other laws that are to some extent influencing the OSH system and most important with regards to registration and compensation for occupational diseases. The law

<sup>32</sup> Bundesministerium für Arbeit und Soziales: Sicherheit und Gesundheit bei der Arbeit 2013, 2014, 2015 – Unfallverhütungsbericht Arbeit. Available from: [https://www.baua.de/DE/Themen/Arbeitswelt-und-Arbeitsschutz-im-Wandel/Arbeitsweltberichterstattung/SuGA/SuGA\\_node.html](https://www.baua.de/DE/Themen/Arbeitswelt-und-Arbeitsschutz-im-Wandel/Arbeitsweltberichterstattung/SuGA/SuGA_node.html). Accessed: 2017-11-24.

on compulsory social insurance in respect of accidents at work and occupational diseases describes the compensation for damages caused by occupational diseases as well as compensation system.

The main ministry responsible for OSH policy is the Ministry of Welfare (Labklājības Ministrija) and its Department of Labour relations and OSH policy. The Ministry of Welfare is responsible for a general overview of OSH policy and fulfilment of obligations regarding State policy in the field of Labour protection as they are described in article 23 of Labour Protection Law. On the other hand, State Labour Inspectorate (Valsts Darba inspekcija) provides control of OSH system in practice.

The legal framework for occupational diseases system is based on Regulations of Cabinet of Ministers no. 908 "Order of investigation and reporting of occupational diseases" (adopted on 6 February 2006). These regulations describe the order for reporting and registration of occupational diseases. One regulation established the National list of recognised occupational diseases that is almost a direct translation of Annexes I and II of Recommendation 2003/670/EC. Annex I of these Regulations also contain main types of diseases that could be caused by the occupational risk factors (as listed in Annexes I and II of the Recommendation 2003/670/EC). In other words, current occupational diseases system allows linking almost any disease, as being occupational disease, as far as there is a clear link between work conditions featuring any of the workplace risk factors (as mentioned in Annex 9 of National regulations or Annexes I and II as mentioned in Recommendation 2003/670/EC). This link shall be established and approved by a special authorised commission of occupational physicians. The regulations describe the establishment of such commissions and requirements for their work.

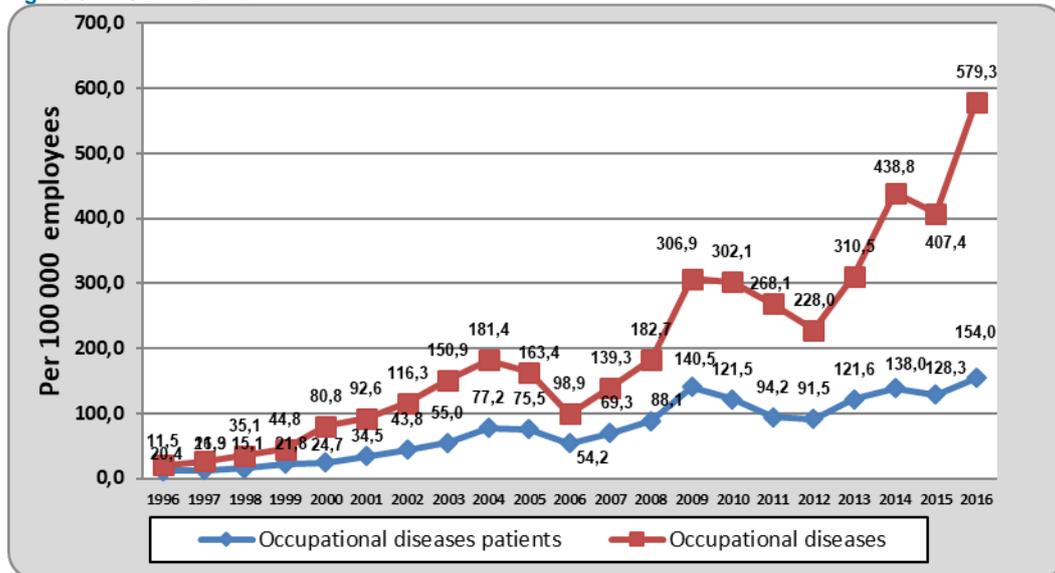
#### *Recent changes of the system:*

There have been no significant developments in the system of OD and National list of OD since 1998 when the first Regulations of the Cabinet of Ministers no. 119 "List of Occupational diseases" come into force (on 3 April 1998). These were replaced by the Regulations of Cabinet of Ministers no. 908 "Order of investigation and reporting of occupational diseases" (adopted on 6 February 2006) coming into force from 1<sup>st</sup> January 2007. The regulation made no principal changes in the system, but added more detailed description on practical aspects of recognition of OD, requirements towards commission of occupational physicians authorised to diagnose OD and keeping of OD statistics. The list of OD in these new regulations were harmonised with Recommendation 2003/670/EC.

#### *Trends in OD:*

The general trend for occupational diseases is a gradual increase since 1996 with some slight decreases in registration (in 2005-2006 – which was caused by changes in registration system that were cancelled 1 year later and a decrease in 2010-2012 which was caused by recovery from the economic crisis in 2010-2011). Below is the overview of OD incidence per 100,000 employees in the years 1996-2016.

Figure 3.12 OD in Latvia

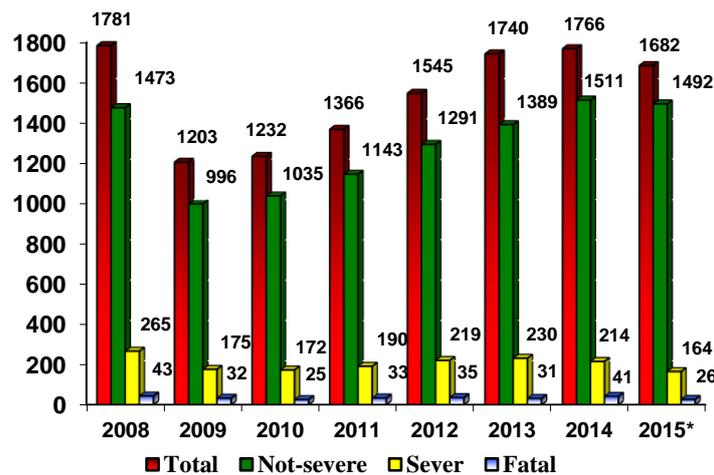


Source: Centre for Occupational and Radiological medicine, P. Stradins Clinical University Hospital.

*Number of occupational accidents:*

The main numbers of occupational accidents (total numbers) are shown in graph below.

Figure 3.13 Occupational accidents in Latvia



Source: State Labour Inspectorate.

As the illustration above shows, nowadays, the total number of occupational accidents varies between 1200 and 1800, while the number of fatal cases are in the neighbourhood of 200 cases per year.

### 3.6 Lithuania

According to the Law on Safety and Health at Work (1<sup>st</sup> July 2003 No. IX-1672, last amended on 1<sup>st</sup> July 2017), an occupational disease is described as a worker's acute or chronic health disorder, caused by one or more harmful and (or) dangerous working environment hazards. The State Registry of Occupational Diseases has been established in 1994 by the Government where data about new cases of occupational diseases are collected. The Institute of Hygiene is responsible for

managing the register since 1994.<sup>33</sup> The register is maintained under the direction of three main acts (and other legal acts regulating activities of state registers):

- Law on State Registers of Republic of Lithuania;
- Law on Legal Protection of Personal Data;
- Regulations on State Register of Occupational Diseases.

Analysis of statistical information from the registry is very important for improving prevention of occupational diseases in order to enhance awareness about the occupational diseases and their causes among health care workers and other specialists, workers and employers.

The registration of occupational and work related diseases is regulated by the 2014-09-08 Lithuania's Government Decision No. 881 "About adoption of the Statement on investigating and reporting of occupational diseases". Based on the "Examination of Occupational Disease Regulations", suspecting an occupational disease may be done both by a family physician or any secondary level physician-specialist. The final assessment of suspected occupational disease is carried out by Occupational Physician who is licensed for this activity, who confirms the suspected diagnosis or reject it.

#### *Procedure*

A health care physician, or sometimes the employer, who suspects an occupational disease has to send a notice to the territorial division of State Labour Inspectorate. In case of acute OD, the State Labour Inspectorate should be informed within 1 day and immediate health care measures should be implemented. The case should be investigated within 5 days and reported to the State Labour Inspectorate. In case of chronic OD, the employer or health care physician needs to send information to the State Labour Inspectorate within 5 days.

The Head of the territorial division of State Labour Inspectorate then establishes a special commission. The chairperson is a labour inspector of territorial division of the State Labour Inspectorate. The members are from the enterprise, National Public Health Centre, Trade Union and the Insurance Company. The chairperson of the commission organizes the investigation of the causes of the occupational disease. When the commission suspects an occupational disease, the chairperson completes the first part of the occupational diseases investigation and confirmation act, "The act on analysing the causes of occupational diseases".

The worker can choose an institution for occupational disease diagnostics, and after the investigation one copy of OD research results is sent to selected health care institution by e-mail. Only licensed Occupational health physicians have the mandate to diagnose occupational diseases. In accordance with the list of occupational diseases, the 10<sup>th</sup> edition of the International Statistical Classification of Diseases and Related Health Problems (ICD-10), also determination criteria of occupational diseases have been established in 2008. These criteria started to be revised on 2018, and new "criteria" should be developed till the end of 2018. The occupational health physician completes the second part of an act "Confirmation of occupational disease", where the conclusion about the confirmation or rejection of an OD is done.

The chairman (from the Labour Inspectorate) shall complete and send a special form (an "OD card") to the State Register of Occupational Diseases in Republic of Lithuania. This must be done within 3 business days from the census act. The case of occupational disease has an identification number and must be recorded in the OD Registry.

---

<sup>33</sup> <http://www.hi.lt/lt/plr-statistine-informacija.html>.

### *Compensation*

According to the law, health damage is compensated if an occupational disease has been established. The decision, on the recognition of the OD, is made by the State Social Insurance Fund Board under the territorial division of the Ministry of Social security and Labour ("Sodra"). Over the last few years, more than 50 percent of occupational diseases have been occurred in unemployed persons. Their economic situation is improved due to social security benefits. Disablement lump sum compensation is paid if less than 30 percent of working capacity was attested by service of the disability and ability determination to Ministry of Social security and Labour (NDNT). If NDNT identifies 30 percent or more loss of working capacity, periodic compensation is paid.

According the National Public Healthcare Development Programme 2016–2023, approved on 16 December 2015, assessment of occupational diseases alone is ineffective. According to the State Registry of Occupational Diseases, preventive health examinations only trace 6–15 per cent of all cases of occupational diseases recorded every year. Most often (87% in 2013) occupational diseases are diagnosed when persons seek medical advice themselves, when the disease is already advanced and the person is already fully or partially incapable of working. According to a study carried out in 2012 by the Institute of Hygiene, 19.3% of General Practitioners perform preventive tests without proper occupational medicine training, and 32.5% of them have not improved their occupational medicine knowledge in five years.

Similarly to many other countries, Lithuanian employers also lack motivation to take care of employees' health. The industrial sector, in order to preserve employees' loyalty to the company, tends to allocate funds for the improvement of the employees' social well-being and working conditions, to health promotion and the availability of psychological help, to the improvement of skills and promotion of life-long learning, to leisure organisation and healthy lifestyle encouragement. Therefore, it is important to encourage the companies with social initiatives aiming at improving the safety and health of employees (statutory tax reliefs, financial support and (or) other state).<sup>34</sup>

### *Prevention*

The obligation to prevent occupational diseases is described in Law on Safety and Health at Work (1<sup>st</sup> July 2003 No. IX-1672, last amended on 1<sup>st</sup> July 2017). The Law on Safety and Health at Work includes the basic provisions and the general objectives concerning occupational safety and health. It lays down the minimum level of requirements of safety and health at work. Based on these Regulations, companies must prepare the internal regulations for Safety and Health Service, if it is required to be established, (depending on size and other criteria-companies with number of employees above 100 or 200), as well as the job descriptions for occupational safety and health specialists and occupational health specialist.

### *Recent changes of the system:*

In the last 10 years, there have been significant changes in the field of legislation on occupational diseases.

A list of occupational diseases is based on aetiological classification for the diseases caused by harmful working environmental factors. It enables that complications of these diseases and the residual or remote effects caused by working environment to be also considered as occupational disease and this legal act came into force on 1<sup>st</sup> January 2000 and was adopted by the Government of Lithuania as Occupational Diseases Social Insurance Law. A list of occupational diseases distinguishes diseases depending on the causal factors into the five following groups:

<sup>34</sup> See: <https://www.e-tar.lt/portal/lt/legalAct/4d3dc740a3c411e58fd1fc0b9bba68a7>.

caused by chemicals, dust (aerosol), biological factors (infections, parasites, etc.), physical factors and the induced stress. Comparing with the previous list, some illnesses, for example neuroses, were removed.

Other important alteration came into force on 5 July 2001. It was stated that occupational diseases are determined not only in accordance with the confirmed list of OD, but also by using the classification of International Statistical Classification of Diseases and related health problems (ICD-10). Changes in coding of diseases should not affect the number of patients with occupational diseases. However, increase in the number was influenced by identification of more than one illness per person for the elaborated details of ICD-10 classification of the diseases from the list. Following the accession to the EU, a wider diapason of diagnoses were chosen, implementing the final version of the Statistics Act of Lithuania, which disposes of provision of statistical information to the Statistical Office of the EU (Eurostat).

The registration of occupational and work related diseases was approved on 8<sup>th</sup> Sept 2014, by Government Decision No. 881 "About adoption of the Statement on investigating and reporting of occupational diseases". It amended the previous Government Decision No. 487 of 28<sup>th</sup> April 2004 "About adoption of the Statement on investigating and reporting of occupational diseases".

The new legal act stated that ODs are determined not only in accordance with the confirmed list of OD, but the classification of International statistical classification of diseases and related health problems (ICD-10) is also used. As new criteria for OD determination, approved in 2008, recommendations were implemented to use maximum latency periods.<sup>35</sup>

For better detection of occupational diseases in early stages and especially recording OD with long latency periods (e.g. asbestos-related diseases) the criteria for identification of asbestos-related occupational diseases could serve as example of best practices on prevention of OD.<sup>36</sup>

In order to continuously monitor the health of workers exposed to dangerous substances even after they left their jobs or retired, the law prescribes post-exposure medical exams.<sup>37</sup>

#### *Trends in OD:*

In general, reported ODs in Lithuania are decreasing, but this might be due to impact of underreporting, lack of number of occupational health physicians in the country or low competencies of specialists working in this field (see Fig. 3.14 below).

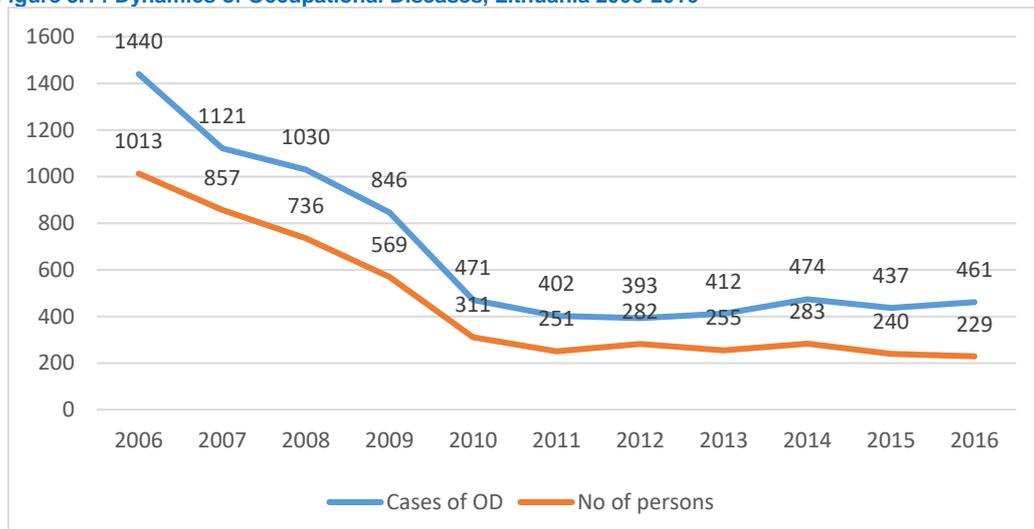
---

<sup>35</sup> Source: Criteria on OD (Lithuanian Minister of Health Order no. V-1087 "Criteria on approval of occupational diseases", Official Journal., 2008, no. 4-147).

<sup>36</sup> "Criteria description for identification of asbestos-related occupational diseases" approved by Lithuanian Minister of Health, Order No. V-888, 29 Oct 2009.

<sup>37</sup> "Regulation on mandatory health checks in health care institutions" amendments made and approved by Lithuanian Minister of Health, Order No. V-178, 13 March 2009.

Figure 3.14 Dynamics of Occupational Diseases, Lithuania 2006-2016

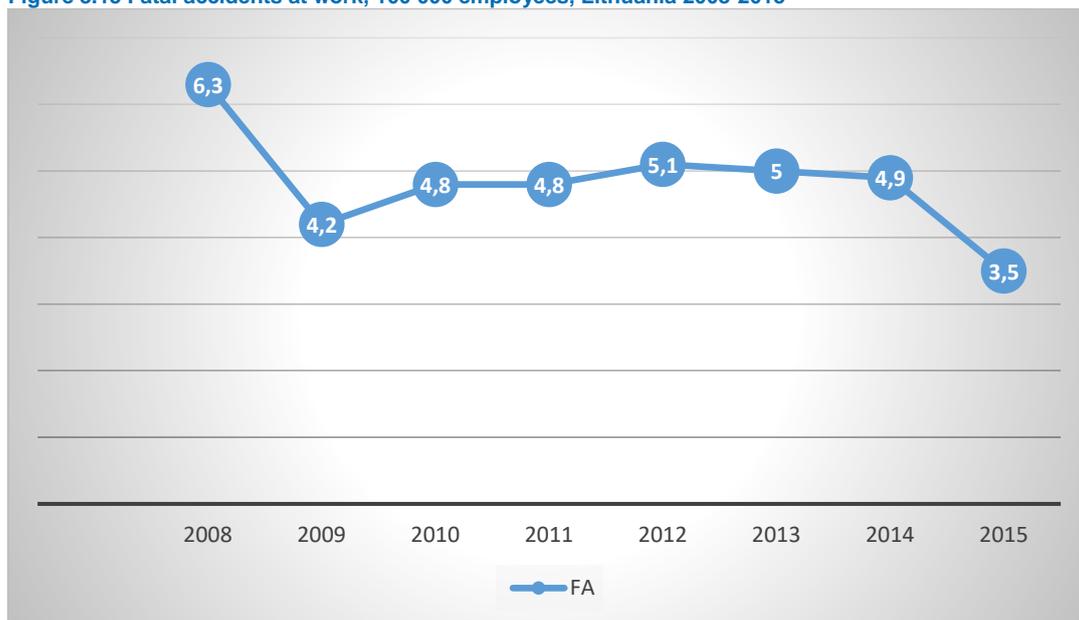


Source: Registry of Occupational Diseases, Health Information Centre, Institute of Hygiene.  
<http://www.hi.lt/lt/plr-statistine-informacija.html>.

*Number of occupational accidents:*

See figures beneath. Source: Information system for the registration and surveillance of trauma and accidents, Institute of Hygiene, Health Information Centre<sup>38</sup>, State Labour Inspectorate: Reporting of accidents and injuries at work.<sup>39</sup>

Figure 3.15 Fatal accidents at work, 100 000 employees, Lithuania 2008-2015



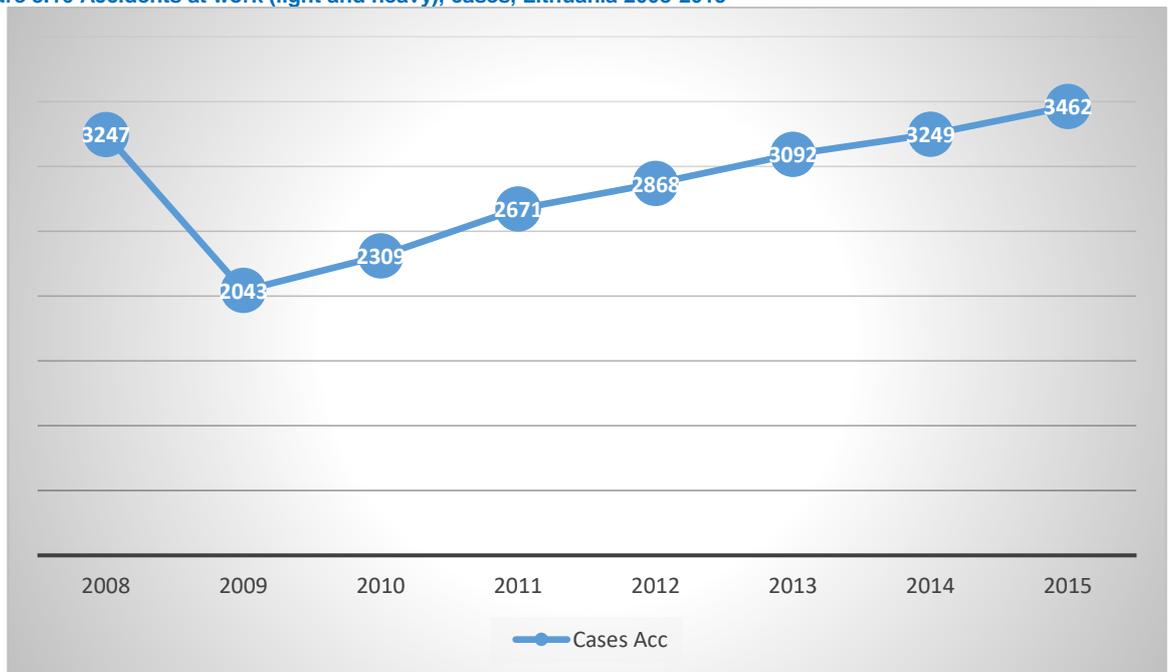
Source: Labour Inspectorate of Lithuania<sup>1</sup> [https://www.vdi.lt/Forms/NA\\_PL.aspx](https://www.vdi.lt/Forms/NA_PL.aspx).

<sup>38</sup> <http://www.hi.lt/traumu-ir-nelaimingu-atsitikimu-stebesenos-is-poskyris.htm>.

<sup>39</sup> [https://www.vdi.lt/Forms/NA\\_PL.aspx](https://www.vdi.lt/Forms/NA_PL.aspx).

Reporting of accidents and injuries at work; State Statistics Department.<sup>39</sup>

Figure 3.16 Accidents at work (light and heavy), cases, Lithuania 2008-2015



Source: Labour Inspectorate of Lithuania<sup>1</sup> [https://www.vdi.lt/Forms/NA\\_PL.aspx](https://www.vdi.lt/Forms/NA_PL.aspx).

### 3.7 Norway

Registration of occupational diseases in Norway resides with the NAV (New Labour and Social Welfare Organisation) Organisation, which does accept or reject claims for compensation for an occupational disease. The legal base is the Folketrygdloven<sup>40</sup> 1997, part VI, chapter 13. If the occupational disease is accepted, it will be registered. However, if the worker does not accept NAV's decision, he/she can take the case into the ordinary court system for a final decision. Unfortunately, NAV has not yet published any statistics of its registrations. Insurance companies, involved in compensation of occupational diseases have their own registrations. The Occupational Clinics has a register since 2009, which is coordinated by the Institute of Occupational Health.

Compensation comes partly from the NAV and partly from private insurance companies. Only employed workers (for whom the employer pays a special tax) are covered by the insurance for occupational diseases by NAV. Self-employed can take an insurance with NAV, which will give them too coverage for occupational diseases, but this insurance is quite expensive. Compensation is built around the concept of "Medical Invalidity" – meaning that only the diseased worker's medical condition will count, excluding his/her social, financial, and other conditions in life. The "Medical Invalidity" level is set by doctors to whom NAV refers the diseased worker, either a specialist in the field of the actual disease or to an occupational physician in one of the five occupational medical clinics in the country. The verdicts go from less than 15% - where there is no compensation - to 100 % - where there is a full compensation. The in-between cases, let us say 40% "medical invalidity" gets 40% of the sum a 100% "medical invalidity" gets. There are criteria – made by doctors and NAV - how much reduction of function will correspond to a certain percentage of "medical invalidity".

For example, a worker with gastro-intestinal cancer caused by asbestos will get a "medical invalidity" score of less than 15 if he/she is successfully operated and cured, while there will be some compensation if the operation ends in a stoma depending on how troublesome this turns out

<sup>40</sup> No official translation. The country expert's recommended translation: Law on Peoples' Social Security.

for the worker. However, if there are metastases and no curation is possible – the compensation will be 100% and the worker is offered a certain sum of compensation money paid each month till his/her death. This sum is calculated (with pre-set algorithms) taking into account the workers present age and the expected life-range for him/her given no disease. However, the worker can - instead of receiving monthly payments - capitalise his/her money and get the whole amount in one lump sum payment. This possibility is of course essential for workers having an incurable disease like different incurable cancers. Thus, the NAV system is based on the principle that the compensation should be for the daily suffering the occupational disease gives. The moment the worker dies, he/she suffers no more and all compensation is finished. There is no additional compensation to relatives.

The second source of compensation comes from the Employer's Insurance Company. From 1<sup>st</sup> January 1990, Norway implemented the Yrkesskadeforsikringsloven<sup>41</sup>. This act declared that every employer should have an insurance agreement with an insurance company that is to pay compensation for occupational injuries and diseases. The idea from the start was that this insurance should cover also some occupational diseases (like musculoskeletal and psychiatric diseases), which the NAV system does not cover. However, rather few cases of musculoskeletal and psychiatric diseases have been compensated. Furthermore, it was hoped the insurance companies should handle cases of occupational diseases faster than the NAV system. This proved not to be so. The insurance companies generally await the decision of the NAV on the "medical invalidity" before offering their compensation. The private insurance system includes a limited compensation to the relatives if the worker has died before the insurance system could reach a verdict on the compensation.

The **Register of Work Related Disorders** (diseases and symptoms) at the Labour Inspection was started in 1923 by the Labour Inspectorate to collect information of cases of Work Related Disorders at workplaces, which could then be inspected to eliminate the harmful exposure(s). Thus, the aim of the register was never meant to give an overview of all Work-related Disorder, but was/is a practical tool to identify and stop ongoing harmful exposures at the workplace.

However, with all cases registered over the years, the Register of Work Related Disorders at least can give an indication, but not the amount, of the profile of Work Related Disorders.

All Norwegian doctors have legal obligation (Work Environment Act) to report work related disorders. However, this functions poorly for several reasons:

1. The doctors do not know this obligation;
2. There has never been set any force behind this obligation against those not reporting;
3. The doctors operating in Norway (Norwegian and foreign trained) are in general very poorly trained in occupational medicine. Thus, they do not recognise a work-related disease/exposure complex when they see one.

The Work Environment Act says that the doctors should report work related disorders and suspected cases of work related disorders. Then it is the professionals in the Labour Inspectorate who decides which of the reports are work related disorders and which are not. The diagnoses are given in the ICD-10 system and the exposures classified according to the exposure schemes of Eurostat with a few Danish and Swedish additions.

Some of the larger insurance companies, but not all, do combine their cases resulting in more than NOK 500 in compensation, in the DAYSY statistical system. This is published in a good manner,

---

<sup>41</sup> No official translation. The country expert's recommended translation: Law on Insurance against injuries and diseases at work.

and is of value to see the general overall trends in compensated occupational diseases from the participating insurance companies. However, it should not be used to reflect the total Norwegian situation.

The **Register of the Occupational Clinics** has been operating since 2009. The different Clinics report on a common form to the Institute of Occupational Health, which collects the data and presents the statistics<sup>42</sup>. The cases in the clinics come from various directions. Some are referred from general physicians, some can be picked up in research projects, and some are referred from the NAV system. Altogether around 1,400 cases are treated a year. About 40% are found to be occupational diseases, roughly 20% are possibly work related and the last around 40% are not work related. The strength of the register is that the diagnoses (in ICD-10) are set by an occupational physician. The weakness is 1) an exposure information that is only group based (like “chemicals” or “psychological”), 2) the cases come from various sources and is not representative of the Norwegian working population. Thus, the statistics must be read with caution, but can be used carefully to give trends in occupational disease over time.

*Recent changes of the system:*

No recent changes reported.

*Trends in OD:*

Not provided.

*Number of occupational accidents:*

Not provided.

### 3.8 Poland

From a legal point of view, the main stakeholders for health and safety at work are:

- Ministry of Labour and Social Affairs (Ministerstwo Pracy i Polityki Społecznej) responsible for issues related to occupational safety and hygiene (including the transposition of the majority of the EU OSH directives). The Ministry supervises the activities of the Work Safety and Hygiene Service;
- The Ministry of Health (Ministerstwo Zdrowia) responsible for issues related to occupational health (medicine) and the monitoring of the occupational medicine service (OMS);
- The State Labour Inspectorate plays a significant surveillance role by checking if the employers fulfil their OSH obligations. The Inspectorate also conducts awareness-raising campaigns on OSH.

The Social Insurance Act of 2002 regulates the issues related to occupational accidents and diseases. The definition of an occupational disease is provided in the Labour Code (above) whereas the Social Insurance Act describes the various categories for work-related accidents covered.

Thus, both notification and recognition of occupational diseases are regulated by the Labour Code Act and the relevant ordinance. Occupational disease is a medico-legal concept. It is defined as a pathology caused by harmful factors occurring in the work environment or by the way of performing a job, and included in the official list of occupational diseases. The Ordinance by the Council of Ministers of 30 June 2009 on occupational diseases<sup>43</sup> contains the list of occupational diseases and specifies how to collect information about their incidence: "§ 9.1. District state sanitary inspector or provincial state sanitary inspector, within 14 days from the date on which the decision about

<sup>42</sup> [http://tidsskriftet.no/sites/default/files/generated\\_pdfs/49229-occupational-health-examinations-of-patients-in-norway.pdf](http://tidsskriftet.no/sites/default/files/generated_pdfs/49229-occupational-health-examinations-of-patients-in-norway.pdf).

<sup>43</sup> Official Journal 2009, No. 105, pos. 869.

diagnosing an occupational disease has become final, fills in an Occupational Disease Reporting Form and sends it to the Central Register of Occupational Diseases run within the Nofer Institute of Occupational Medicine in Lodz”.

Recognition of an occupational disease in an employee (or a former employee) can either occur during his employment or after its completion provided that relevant symptoms are documented, appear in the registry and concern the employment period in question. The employer and his/her physician are obliged to report every possible case of an occupational disease to the local sanitary inspectorate and to the district labour inspector. The suspected person is then referred to a respective unit (regional centre of occupational medicine) where an authorized physician (occupational medicine specialist) issues a medical certificate to say whether the examined subject suffers from an occupational disease. In case of an appeal, the certificate is reconsidered by scientific-research institutes operating in the field of occupational medicine. Institutes can be also asked for a consultation by regional centres, which is often the case in occupational allergy field, where specific provocation tests are needed or in occupational cancer.

The OD recognition process is carried out in dedicated occupational disease clinics located in the regional centres of occupational medicine. There are 20 such regional units in the country. There are also two institutes of occupational medicine, which are supreme to the regional centres and used to appeal against the certificates issued in the centres. Every year approximately 6,000 possible OD cases are reported and immediately scrutinized.

The result of above diagnostics is recognition of the suspected occupational disease or the lack of it. The statement as medical document can be seen only by a patient or medical service, so at this level the employer does not know the results. Subsequent proceedings are handled by the sanitary inspectorate. Based on the medical certificate and other supporting documentation, the local sanitary inspector then issues a conclusive statement whether the examined subject suffers from an occupational disease. Both the employer and the (former) employee may turn to the regional sanitary inspectorate and appeal against the statement. The decision may be also challenged against in the Administrative Court<sup>44</sup>.

#### *Recent changes of the system:*

Changes to the national list were made in 2009 and concerned subtle alterations of the previous (of 2002) register. The revised OD reporting form now says that every chemical agent present in the workplace may cause intoxication. Previously, the point contained a list of agents, which were likely to cause either acute or chronic poisoning. Similar changes were made to other positions on the schedule such as pneumoconiosis, neoplasms induced by human carcinogens or infectious diseases. Changes also concerned the assessment criteria of hearing injuries caused by noise and

---

<sup>44</sup> Sources:

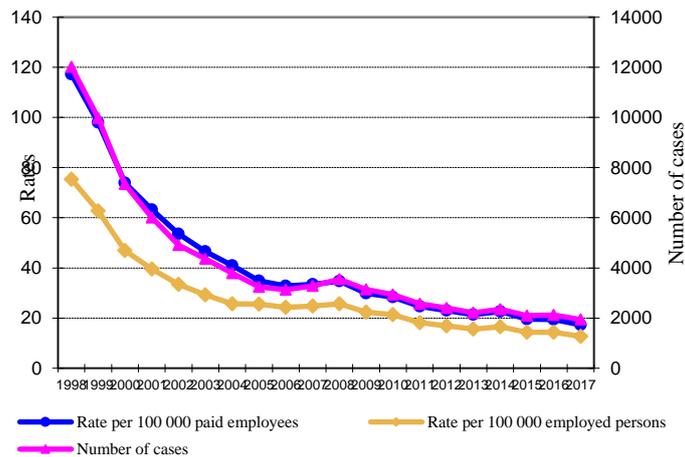
1. Constitution of the Republic of Poland of 2 April 1997, Journal of Laws of 1997 No 78, item 483. Available at [in English]: <http://www.sejm.gov.pl/prawo/konst/angielski/kon1.htm> (Accessed November 2017).
2. Labour Code Act of 26 June 1974 (Official Journal 1974 No 24, pos. 141 with amendments). Available at [in Polish]: <http://isap.sejm.gov.pl/DetailsServlet?id=WDU20140000208> (Accessed November 2017).
3. The Act of 30 June 2009 on occupational diseases (containing list of occupational diseases) (Official Journal 2009, No 105, pos. 869). Available at [in Polish]: <http://prawo.sejm.gov.pl/isap.nsf/DocDetails.xsp?id=WDU20091050869> (Accessed November 2017).
4. The Act of 24 May 2012 on documentation of occupational diseases (Official Journal 2013, pos. 1379). Available at [in Polish]: <http://prawo.sejm.gov.pl/isap.nsf/DocDetails.xsp?id=WDU20120000663> (Accessed November 2017).
5. The Act of 30 October 2002 concerning social insurance in relation to accidents at work and occupational diseases (Official Journal 2002 No 199, pos. 1673 with amendments). Available at [in Polish]: <http://isap.sejm.gov.pl/DetailsServlet?id=WDU20021991673> (Accessed November 2017).
6. The Act of 27 August 1997 concerning occupational and social rehabilitation and employment of disabled persons (Official Journal 1997 No 123, pos. 776 with amendments). Available at [in Polish]: <http://prawo.sejm.gov.pl/isap.nsf/DocDetails.xsp?id=WDU20170001773> (Accessed November 2017).

of obstructive bronchitis. Additionally, two entities were added to the diseases of the peripheral nervous system caused by the mode of working.

*Trends in OD:*

A significant decrease in the absolute number of occupational diseases has been noted in Poland since 1998, as has a continuing reduction in the incidence rate following a sharp rise observed in the period 1991–1998 (Fig. 3.17). The significant increase and decrease in the frequency of occupational diseases was the result of a combination of various causative factors, mainly associated with the process of the national economy transformation (deindustrialization).

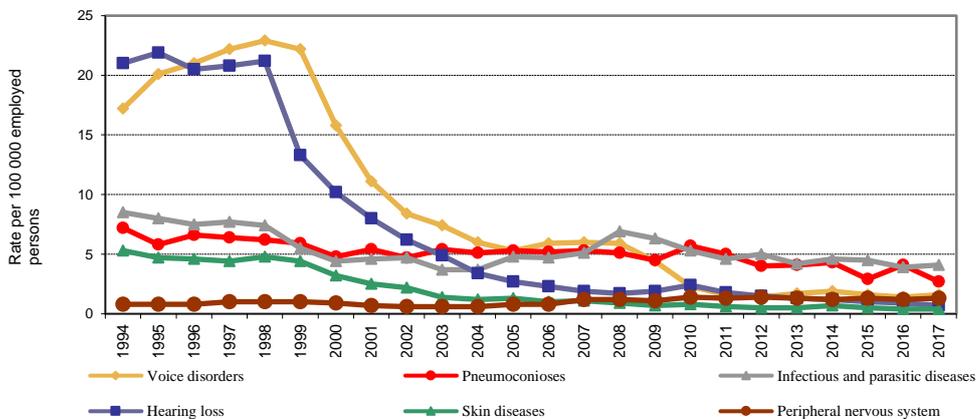
**Figure 3.17 Occupational diseases in Poland, 1998-2017**



Source: Central Register of Occupational Diseases in Poland.

The most evident example of the changes occurring in the profile of recognized occupational diseases are chronic poisonings with chemicals, which in the 1960s accounted for about 1/3 of all cases of occupational diseases, and were mainly caused by lead, carbon monoxide and benzene. Moreover, the other observed favourable changes in the incidence of occupational diseases include considerable reduction in the incidence of hepatitis, a marked reduction of the voice organ pathologies as well as improvement of the detection of asbestos-related diseases through implementation of the program of medical examinations of former workers of asbestos processing plants (Fig. 3.18).

**Figure 3.18 Selected categories of occupational diseases in Poland, 1994-2017**



Source: Central Register of Occupational Diseases in Poland.

On the other hand, the numbers of cases of asthma and other allergic diseases, skin disorders, cancer and pathologies of the musculoskeletal system are likely to be underestimated, in comparison to data from other countries.

Newly emerging diseases are not recognised as OD.

*Number of occupational accidents:*

2016: 87,886 accidents at work (females 33,116), 239 deaths

2015: 87,622 accidents at work (females 32,646), 303 deaths

2014: 88,642 accidents at work (females 32,708), 262 deaths

### 3.9 Russian Federation

The registration, as well as the notification and recognition of occupational and work related diseases are regulated by the Government Decision of 15 December of 2000 No. 967 "About adoption of the statement on investigating and reporting of occupational diseases". More detailed explanation can be found in "Instructions on the implementation of the Statement on investigating and reporting of occupational diseases" stated by the Order of Ministry of Health of 28 May of 2001 No. 176 "On system enhancement requests about investigating and reporting of occupational diseases".

The process of acceptance of an occupational disease is different for acute and chronic occupational diseases. For newly occurring occupational diseases, there is a separate procedure.

*1. Acute occupational diseases:*

When an acute occupational disease is suspected every medical doctor has to send the notice within 24 hours to the local authority of sanitary-epidemiological supervision (currently the name of the institution is changed into Federal service on supervision in the domain of protection of right of the consumers and person's well-beings), and to the employer. Within 24 hours after receiving the notice, the local authority of sanitary-epidemiological supervision starts with clarifying the circumstances and causes of the disease. Once the circumstances are clarified, the local authority has to write the Sanitary-hygienic report of the working conditions, and then has to send this report to the medical organization (e.g. clinic or hospital) which has notified the suspected occupational disease. Then, the medical organization, establishes a final diagnosis of the acute occupational disease, based on the clinical data and on information about working conditions and complete the medical report.

In other words, the final diagnosis of acute occupational disease in Russia may be established in *any* medical organization.

*2. Chronic occupational diseases:*

If a chronic occupational disease is suspected, the notice about an occupational disease must be sent within 3 days to the local authority of sanitary-epidemiological supervision. A sanitary-hygienic report of the working conditions should be sent within 2 weeks to the medical organization, which suspected the occupational disease. The medical organization, which has established the preliminary diagnosis of the occupational disease, must send the patient to the Centre of Occupational Diseases within 30 days to perform further examination. The Centre of Occupational Diseases establishes the final diagnosis of chronic occupational disease, based on clinical data of worker's health and documents submitted, and completes a medical report. Within 3 days, this report has to be sent to 4 addresses: to the local authority of sanitary-epidemiological supervision,

to the employer, to the local authority of social security, and to the medical organization. Furthermore, the medical report should be provided to the worker.

### *3. Newly occurring occupational diseases:*

Each newly diagnosed case of occupational disease, both acute and chronic, must be investigated. The employer is responsible for organizing the investigation of circumstances and causes of an occupational disease. The employer has to inform the commission on inquiry of occupational diseases within 10 days after receipt of the notice about the final diagnosis. The commission on inquiry of an occupational disease is chaired by the head of the local authority of sanitary-epidemiological supervision and is composed of a representative of the employer, an occupational safety specialist and a representative of a medical organization, trade union or other authorized workers' body. Other specialists can take part in the inquiry.

The employer is obliged to provide all documents and materials, including archives, which are necessary to investigate the working conditions. The employer also has to guarantee that all necessary medical and hygienic investigations can take place, including interviews with colleagues and other relevant persons if needed.

The Commission will establish the liability of the worker (expressed in %) and defines the persons who are responsible for the violation of sanitary-epidemiological rules as well as sanctions and preventive measures. In Russia, there is no legal framework on registration of work-related diseases. The term "work-related disease" is absent in Russian regulatory framework.

### *Compensation:*

Compensation is regulated by:

- the Government Decision of 16 October 2000 No. 789 "About the statement of rules for ascertaining the degree of lost capacity for work as a result of accidents at work and occupational diseases";
- by the Ministry of Labour Decision of 18 July 2001 No. 56 "About the statement of temporary criteria of ascertaining the degree of lost capacity for work as a result of accidents at work and occupational diseases, and the rehabilitation program template for those affected from an accident at work and occupational diseases";
- by the Government Decision of 20 February 2006 No. 95 "On procedures and conditions of recognition of the person as a disabled";
- by the Order of Ministry of Labour and Social Protection of 17 December 2015 No. 1024 "On classifications and criteria used in the implementation of medical and social care expert assessments of citizens by federal official bodies medical and social care expert assessment".

When an occupational disease is diagnosed, the occupational physician from the Centre of Occupational Diseases should assess the degree of work disability of the patient. Thereafter the occupational physician directs the patient to the Bureau of medico-social expertise. The staff of the Bureau of medico-social expertise establishes the amount of work disability (in %) on which the level of compensation is based. Then, the rehabilitation specialist of the Bureau of medico-social expertise, using also recommendations of the occupational physician, determines the Program for rehabilitation of the injured person.

### *Prevention:*

The obligation to prevent occupational diseases is described in the Labour Code of the Russian Federation dated 30 December 2001 (Federal law No. 197). Article 210 contains the list of major issues on OSH, and one of topics is the prevention of accidents at work and occupational diseases.

The prevention of work-related diseases in Russia is not regulated in a legal regulatory framework. Each employer and/ or medical organisation can organize prevention programs, but it is not an obligation.

#### *Recent changes of the system:*

Over the past 10 years, there have been significant changes in the field occupational diseases legislation.

Since 1<sup>st</sup> January 2012, the regulatory framework for mandatory medical examinations of workers has been changed, following the adoption of the Order of the Ministry of Health of the Russian Federation dated 12 April 2011 No. 302 on "List of harmful and (or) dangerous occupational exposures and types of work, which require pre-placement and periodical medical examinations and Procedure of mandatory pre-placement and periodical medical examinations of workers engaged with hazardous occupations under harmful and (or) dangerous working conditions". This Order replaced four other Ministry orders, which turned out to be obsolete.

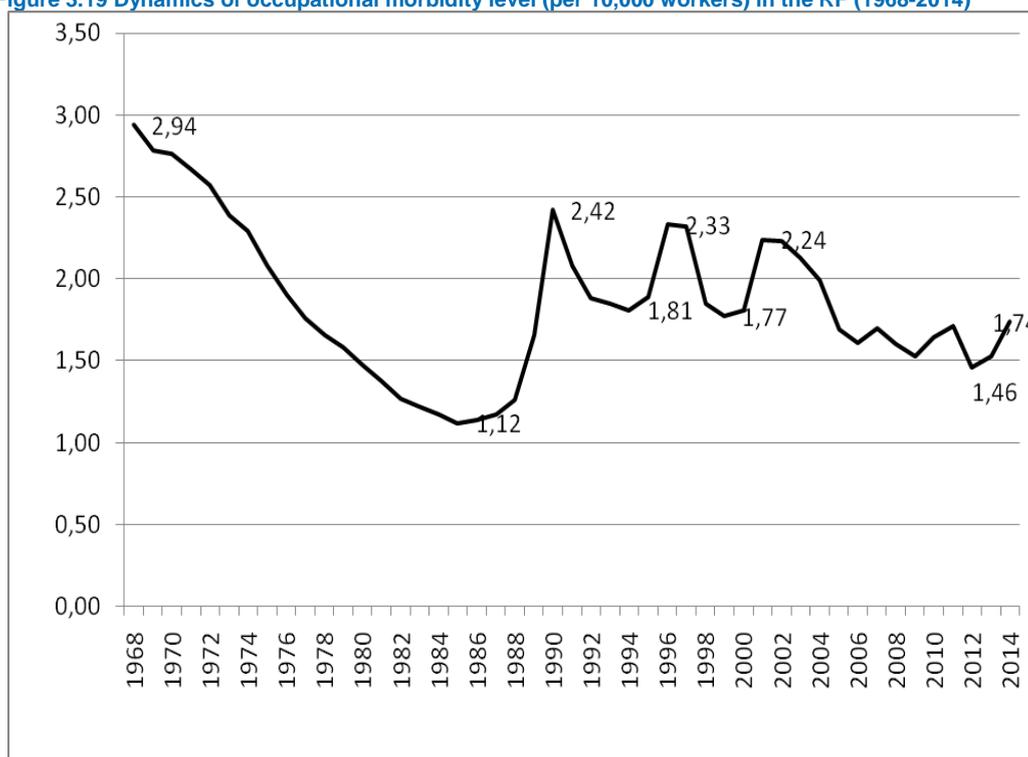
Several orders have been cancelled in the last decade:

- 1) The order of the Ministry of Healthcare issued on 14<sup>th</sup> March 1996 No. 90 called "Rules of pre-placement and periodical medical examinations of workers. Medical permit for workers";
- 2) The order of the Ministry of Health and Social Development of the Russian Federation issued on 16<sup>th</sup> August 2004 No. 83 "Lists of harmful occupational exposures and types of works, requiring pre-placement and periodical medical examinations and order of carrying out Procedure of these examinations;
- 3) The Order of the Ministry of Health and Social Development dated 16<sup>th</sup> May 2005 No. 338 on "Amending Supplements No. 2 of the Order of the Ministry of Health and Social Development of the Russian Federation dated 16<sup>th</sup> August 2004 No 83";
- 4) Sub-paragraphs 11, 12, and 13 of Supplement No 2 of the Order of Ministry of Health of USSR dated 29<sup>th</sup> September of 1989 No. 555 on "System enhancement of medical examinations of workers and vehicle drivers" (text of this order was cancelled earlier):
  - In 2012 the National List of occupational diseases has been updated (Order of Ministry of Health dated 27<sup>th</sup> April 2012 No 417 on "On approval of Occupational Diseases List");
  - In 2012, a unified procedure of medical care for acute and chronic occupational diseases was developed in Russia for the first time. This unified procedure was approved by the Order of Ministry of Health dated 13<sup>th</sup> November 2012 No 911 "Procedure of medical care for acute and chronic occupational diseases";
  - In 2016, a unified procedure of fitness for work assessment was elaborated in Russia for the first time, and later on approved by the Order of Ministry of Health dated 5<sup>th</sup> May 2015 No 282 "Procedure of fitness for work assessment. Standard medical certificate revealing suitability or non-suitability of an employee to perform exact work".

#### *Trends in OD:*

In recent years, the number of reported occupational diseases is decreasing. See Figure 3.19.

Figure 3.19 Dynamics of occupational morbidity level (per 10,000 workers) in the RF (1968-2014)<sup>45</sup>



*Number of occupational accidents:*

In the following table, the number of officially registered insurance cases in the executive bodies of Russian social security fund is presented.<sup>46</sup>

Categories	2014	2015	2016
Light accidents	39,079	34,745	32,387
severe accidents	6,153	6,180	5,524
fatal accidents	2,221	1,886	1,870
Others	7,268	6,963	6,209
<b>Total</b>	<b>54,721</b>	<b>49,774</b>	<b>45,990</b>

### 3.10 Sweden

There are two special compensation schemes for occupational injuries - a public and private law. The Swedish occupational injury system thus constitutes a mixed system. The public model means that insurance coverage is the responsibility of the public and the remuneration is paid through the social insurance that is administered by the state. The public model thus stands for a general standard of protection in the event of illness and work injury.

This compensation is supplemented by collective bargain-based insurance on liability. The contract model means that compensation for occupational injury is the employer's and the joint responsibility of workers. Remuneration is administered by party-controlled insurance. The contract model also means that the insurance cover works as a liability insurance for employers and remuneration is issued under the principles of civil liability.

<sup>45</sup> Cited by: Current Status and Prospects of Occupational Medicine in the Russian Federation. Mazitova NN. Et al. Ann Glob Health. 2015 Jul-Aug;81(4):576-86. doi: 10.1016/j.aogh.2015.10.002.

<sup>46</sup> Source of information: Russian social security fund, <http://fss.ru/ru/statistics/254806.shtml>.

The regulation of the two compensation schemes for occupational injuries is done according to:

1. Some provisions of the Social Insurance Code (SFB) which - in addition to health insurance - regulates the right to compensation for occupational injury (occupational injury insurance), including in shape of occupational injury, occupational injury, injury, handling and coordination with other social security benefits;
2. Insurance against occupational injury (TFA) - or equivalent insurance cover - with contractual terms, including on occupational injury concepts and on the extent of the damages compensation.

Ad 1) The National Social Insurance Agency administrates the public system. The system is open and independent of diagnosis (the ILO list is not applied). If the employee loses income due to an occupational injury, he/she can receive compensation from Försäkringskassan. This is called annuity. To receive annuity, a doctor must determine that the occupational injury will affect the ability to work for at least one year going forward.

An employee can be entitled to an annuity if:

1. He/she loses income because the worker must work fewer hours or cannot work at all, must change job or work tasks, lose out on a bonus, or must undergo retraining due to the injury;
2. His/her income has decreased by at least 1/15 compared to what his/her earnings were before the injury;
3. There is a doctor's certificate or other medical documentation indicating that the occupational injury will affect his/her ability to work for at least a year going forward from the date the doctor wrote the certificate or documentation;
4. He/she is insured in Sweden.

Ad 2) TFA can provide compensation for occupational disease if the damage persists after 180 days and proved to be a work injury by the Social Insurance Fund. They also can compensate for diseases listed in Table 1 of the ILO Convention 121 provided the damage persists after 180 days after it was shown.

#### *Recent changes of the system:*

No recent changes reported.

#### *Trends in OD:*

The number of people that receive pensions for work-related injury has decreased from 90,000 in 2000, to 23,000 in 2016. This is a very remarkable change!<sup>47</sup> This is partly due to a law changes 1993. Before, an injury was considered caused by work if there was not stronger evidence against causation. The rule for causation was reversed so that stronger evidence have to support causation. The laws changed again 2002 changing criteria for causation to change gender imbalance. Furthermore work related disease and injuries have to have long term economical consequence to be further investigated.

---

<sup>47</sup> [https://www.forsakringskassan.se/wps/wcm/connect/d9a3498f-ea2a-40a7-a358-80722d13963a/socialforsakringen-i-siffror-2016-engelsk.pdf?MOD=AJPERES](https://www.forsakringskassan.se/wps/wcm/connect/d9a3498f-<u>ea2a-40a7-a358-80722d13963a/socialforsakringen-i-siffror-2016-engelsk.pdf?MOD=AJPERES</u>).

Figure 3.20 Number of persons receiving work injury, 2000-2016

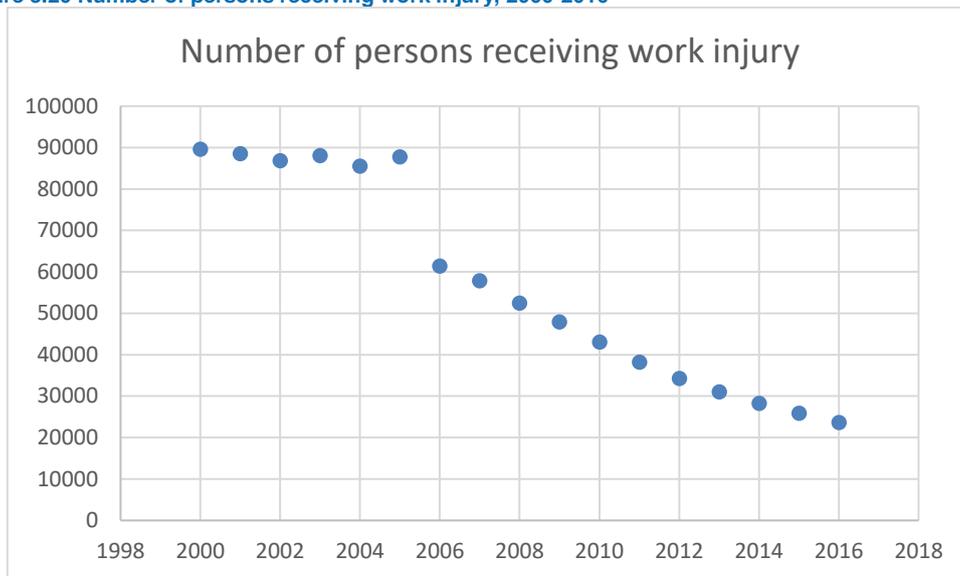
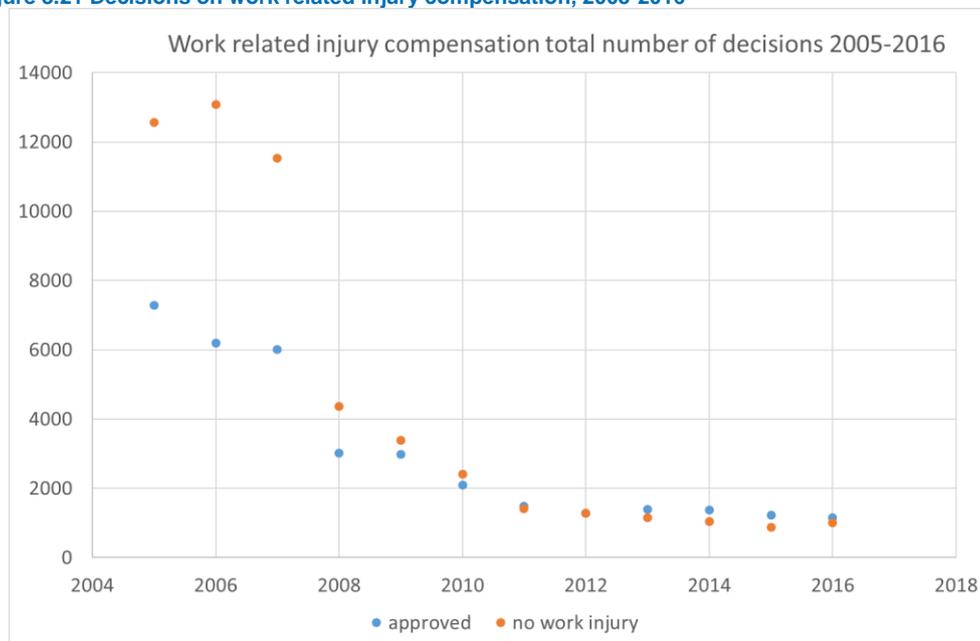


Figure 3.21 Decisions on work related injury compensation, 2005-2016



*Number of occupational accidents:* The reported number of occupational accidents in 2014 is 31,257 accidents with absence and 61,263 accidents without absence.<sup>48</sup>

### 3.11 Summary of the country reports

Although there are variations among the participating countries, in general one can say that modern legislation on OSH and prevention and compensation of OD has been established from about 1980 in most of the countries covered by the present investigation. In the 1990s and after the year 2000, Western European countries showed a tendency to deregulate OHS legislation and activities and put more responsibility on employers and employees. Governments tend to step down in the OHS field. For example, Sweden has experienced a strong deregulation concerning occupational

<sup>48</sup> <https://www.forsakringskassan.se/wps/wcm/connect/d9a3498f-ea2a-40a7-a358-80722d13963a/socialforsakringen-i-siffror-2016-engelsk.pdf?MOD=AJPERES>.

diseases, whereas for example Germany still has a strong body of legislation in this field. The legal arrangements in countries like Russian Federation and Belarus, and to a certain degree Poland and the Baltic states, are still rooted in the communist period of these countries, characterised by a stronger government controlled system. Compensation is in some countries publicly arranged, like Russian Federation and Belarus. In Finland, it is privately organized and in several other countries, there are mixed systems with public and private arrangements. In Germany, all compensation measures are financed exclusively by the employers through branch-specific accident insurance funds in accordance with a bonus-malus-system (polluter pays principle; incentive).

Influential regulations or guidelines for legislation and arrangements concerning occupational diseases in European countries are the European OSH framework directive 89/391/EEC of 12 June 1989, and ILO recommendations (last updated in 2010) on occupational diseases. EU regulations, recommendations and ILO recommendations and guidelines have been implemented to a certain degree in the various countries, but at least they are serving as a sort of standard.

In some countries like Germany and Finland, there is a strong focus on prevention of adverse health effects of work. In other countries, like the Russian Federation, the focus tends to be more on diagnosis and regulation of occupational diseases.

The impression is that the main changes in the legal arrangements concerning OD over the last 10 years were of technical or organisational kind. In some cases diseases were added or removed from lists or there were (small) changes to the process. None of the countries made fundamental changes in the legal system in the last 10 years.

There is a wide variation of reported occupational diseases in the participating countries. Furthermore, the share of recognised as compared to the number of reported cases varies significantly. E.g. in Germany 81,702 cases were reported in 2015, from which 18,042 cases were recognized (22%). In the same year in Finland 4,338 cases were reported, whereas 1,616 cases were recognized (37%). There is also a wide variation in diagnosis of recognized diseases. Most frequent diagnoses of recognized OD were:

- Finland: Occupational Hearing Loss (29%)
- Russian Federation: Occupational Hearing Loss (27%)
- Belarus: Diseases due to industrial aerosols (60%)
- Poland: Infectious diseases (31%)
- Germany: Occupational Hearing Loss (36%)
- Estonia: Overuse (musculoskeletal) (19%)

Most countries consider the recognition of OD in their country as reliable. However, all the national experts are convinced that there is a considerable underreporting in the analysed countries, with the likely exception of Germany and Finland.

Trends in ODs differ in the participating countries:

- Finland: Stable in period 2012-2014 followed by a decrease.
- Russian Federation: Decrease since 2000, with a slight increase in 2012-2014.
- Belarus: No clear trends in the last 5 years.
- Poland: Decrease since 1998, following a steep increase in 1991-1998.
- Germany: Sharp increase since 1981, increase in reported diseases since 2010; the number of recognized diseases is stable.
- Lithuania: Decrease since 2005, stable since 2010.
- Estonia: Decrease since 2010.

- Latvia: Increase since 1996, with periods of decrease in 2004-2006 and 2010-2012.

According to our assessment, the increases and decreases of the number of recognised and reported OD do not reflect the real numbers. The within-country variations are likely caused by economic and political factors, as well as changes in the legal definitions and the registration systems.

The following options for improvement of reporting were suggested by the national experts:

- Increased government interest in OD and WRD statistics;
- Training in OD and WRD for occupational physicians and other doctors improving reporting;
- Improvement of early detection;
- Better analysis of the data and analysis of trends;
- Exposure follow-up;
- Evidence based criteria for assessment of OD and WRD;
- Case studies;
- Prevention campaigns.

## 4 Estimation of OD, WRD and ER

### Introduction

Tables with estimations of categories of OD, WRD and index diseases have been received from all participating countries except Sweden. The *rapporteur* from Sweden explained that estimates on the basis of the existing register are not possible, but information of available statistical information has been provided by the Swedish country expert. Furthermore, not all countries could fill in all fields of the tables for OD and index diseases because the information is not available. Only Finland completed the table for WRD, Germany did fill in the table for WRD as far as possible and provided additional information on an alternative approach to estimate WRD in the text of the questionnaire.

In this chapter, we present only the completed tables of categories of OD to get a general picture of differences in reporting between countries.

To calculate incidence rates of OD and WRD we used the following data on the working population of the participating countries:

**Table 4.1 Labour Force (denominator) of the participating countries**

Country	Labour Force (x 1000)	Year of reference	Source
Finland	2,707	2017	OECD
Sweden	5,383	2017	OECD
Norway	2,759	2017	OECD
Russian Federation	76,109	2017	OECD
Belarus	4,572	2014	Belstat
Poland	17,267	2017	OECD
Germany	43,285	2017	OECD
Lithuania	1,319	?	Country expert
Estonia	699	2017	OECD
Latvia	980	2017	OECD

During the meeting in Tartu (Estonia), it was concluded that the reliability of figures from registries on OD is low, varying per disease within countries and between countries. The definition and thereby the estimation of OD is problematic, because the definition is the result of a mix of scientific, economic and legal considerations. Actually, OD is a subcategory of WRD. Unfortunately, reliable figures for WRD cannot be distracted from the registers. However, estimates can be made by data linkage of sickness absence duration data by disease with employment data per economic sector. The method, regularly used in Germany, provides clear evidence on the possible work-relatedness of a disease and shows at the same time the magnitude of the health problem in economic context as well as the preventive potential.

We used the Realloc-1 method, with Finland as the reference country, to make an estimate of the number of OD in the participating countries and an estimate of the degree of underreporting in the participating countries. Comparisons can only be made within countries, comparisons between countries are problematic because of several socio-legal and economic differences between countries and differences in the way countries collect data.

We used the Realloc-2 method to estimate WRD in the participating countries. Thereby, the ratio between WRD and OD can be used as the coefficient for multiplication. Calculations of attributable fractions or DALY's are beyond the scope of this project. We calculated a coefficient based on the rate between WRD and OD of 67.

Current registers are not appropriate for identifying ER, new tools should be developed and implemented as well as research. Examples are the activities of the Modernet network.<sup>49</sup>

In the next series of country-by-country tables, the degrees of underreporting (in the last column) are *not* the result of a calculation. The numbers on a 0-2 scale represent the estimation/opinion of the national country experts. Therefore, separate estimations by gender could not provide additional information for the readers of the present report.

## 4.1 Belarus

**Table 4.2 Number of OD in Belarus**

Categories	Year: Number (gender distr.) 2014 (m/g)	Year: Number (gender distr.) 2015 (m/g)	Year: Number (gender distr.) 2016 (m/g)	Source number of OD	Estimated degree of under- reporting* (0,1,2)
Diseases caused by Chemical agents	10 (7/3)	2	4 (3/1)		
Diseases caused by Physical agents	35 (29/4)	26 (22/4)	26 (25/1)		
Diseases caused by Biological agents	9 (7/2)	7(5/2)	5 (3/2)		
Respiratory diseases	35 (31/4)	55 (48/7)	54 (45/9)		
Skin diseases	0	1	0		
Musculoskeletal diseases	2	1	1		
Mental diseases and Behavioural disorders	0	0	0		
Occupational Cancer	0	0	0		
Other diseases		2	1		
<b>Total number</b>	<b>91</b>	<b>93</b>	<b>91</b>		

Notes:

- 0 = no or very little under-reporting.
- 1 = moderate under-reporting (> 50% is reported).
- 2 = strong under-reporting (<50% is reported).

## 4.2 Estonia

**Table 4.3 Number of OD Estonia**

Categories	Year 2014 Number (gender distr.)	Year 2015 Number (gender distr.)	Year 2016 Number (gender distr.)	Source number of OD	Estimated degree of under- reporting* (0,1,2)
------------	--	--	--	---------------------------	--

<sup>49</sup> [www.modernet.org](http://www.modernet.org).

Categories	Year 2014 Number (gender distr.)	Year 2015 Number (gender distr.)	Year 2016 Number (gender distr.)	Source number of OD	Estimated degree of under- reporting* (0,1,2)
Diseases caused by Chemical agents#	3 L23.5 – 2 L23.8 – 1 (gender distribution unknown)	1 L23.1 – 1; (gender distribution unknown)	-	Health Board	2
Diseases caused by Physical agents	10 H83.3 – 5; T75.2 – 5 (gender distribution unknown)	6 T75.2 – 2; H83.3 – 4 (gender distribution unknown)	4 T75.2 – 3; H83.3 – 1 (gender distribution unknown)	Health Board	2
Diseases caused by Biological agents	-	-	2 J67.7 – 1; J67.9 – 1; (gender distribution unknown)		2
Respiratory diseases	5 J45.8 – 2; J41.8 – 1; J41.0 – 1; J30.3 – 1 (gender distribution unknown)	2 J45.0 – 1; J63.4 – 1 (gender distribution unknown)	4 J30.3 – 1; J84.8 – 1 A15.0 – 2 (gender distribution unknown)	Health Board	2
Skin diseases#	3 L23.5 – 2; L23.8 – 1 (gender distribution unknown)	1 L23.8 – 3; (gender distribution unknown)	2 L23.8 – 1; L24.8 – 1; (gender distribution unknown)	Health Board	2
Musculoskeletal diseases	139 M70.8 – 31; M77.1 – 20; M75.1 – 19; M25.5 – 16; M77.0 – 8; M24.2 – 8; M15.8 – 7; M54.5 – 6; M65.8 – 6; M75.2 – 3; M51.1 – 2; M15.0 – 1; M65.4 – 1; M47.2 – 1;	127 M70.8 – 30; M77.1 – 19; M75.1 – 20; M25.5 – 13; M77.0 – 12; M24.2 – 12; M15.8 – 3; M54.5 – 2; M65.8 – 6; M75.2 – 1; M51.1 – 1; M65.4 – 1; M75.5 – 2; M24.1 – 1;	99 M15.8 – 2; M25.5 – 12; M51.1 – 1; M54.5 – 5; M65.8 – 5; M70.8 – 23; M75.1 – 15; M65.4 – 2; M75.2 – 1; M77.0 – 14; M77.1 – 16; M18.0 – 1; M65.0 – 1; M19.2 – 1	Health Board	0

Categories	Year 2014 Number (gender distr.)	Year 2015 Number (gender distr.)	Year 2016 Number (gender distr.)	Source number of OD	Estimated degree of under- reporting* (0,1,2)
	M77.0 – 1; M67.8 – 1; M24.1 – 1; M18.0 – 1; M25.8 – 1; M65.3 – 1; M50.1 – 1; M19.8 – 1; M75.4 – 1; M18.4 – 1 (gender distribution unknown)	M19.8 – 2; M25.8 – 1; M65.3 – 1 (gender distribution unknown)	(gender distribution unknown)		
Mental diseases and Behavioural disorders	-	-	-		
Occupational Cancer	-	-	-		2
Other diseases	30 G56.0 – 22; G56.2 – 3; I73.0 – 5	19 G56.0 – 15; G56.2 – 1; I73.0 – 1; S63.5 – 2	21 G56.0 – 16; G56.2 – 3; I73.0 – 2		2
Total number	187 (n=56) (M -18; F -38)	158 (n=50) (M- 17, F-33)	138 (39) (M-15, F-24)		1

Notes: #occupational diseases caused by chemicals and also diagnosed as skin diseases; \*occupational diseases of nervous and circulatory systems, related to musculoskeletal or joint's problems (ICD code S63.5).

In Table 4.3 we can see in total 187 OD diagnoses in 56 patients for 2014, 158 diagnoses in 50 patients for 2015 and 138 diagnoses in 39 patients for 2016, whereas there are more female OD patients compared to men.

### 4.3 Finland

Table 4.4 Number of OD in Finland

Categories	Year: 2014 Number (gender distr.)	Year: 2015 Number (gender distr.)	Year: 2016 Number (gender distr.)	Source number of OD	Estimated degree of under- reporting* (0,1,2)
Diseases caused by Chemical agents	856 Male 619 (72%) Female 237 (28%)	796 M 593 (74 %) F 203 (26 %)	No information available	FIOH	?
Diseases caused by	472	474	No information	FIOH	?

Categories	Year: 2014 Number (gender distr.)	Year: 2015 Number (gender distr.)	Year: 2016 Number (gender distr.)	Source number of OD	Estimated degree of under- reporting* (0,1,2)
Physical agents *	M 452 (95 %) F 20 (5 %)	M 456 (96 %) F 18 (4 %)	available		
Diseases caused by Biological agents **	147 M 58 (39 %) F 89 (61 %)	88 M 13 (15 %) N 75 (85 %)	No information available	FIOH	?
Respiratory diseases	519 M 422 (81 %) F 97 (19 %)	477 M 408 (86 %) F 69 (14 %)	No information available	FIOH	?
Skin diseases	315 M 138 (44 %) F 177 (56 %)	271 M 112 (41 %) F 159 (59 %)	No information available	FIOH	?
Musculoskeletal diseases***	137 M 89 (65 %) F 48 (35 %)	111 M 77 (69 %) F 34 (31 %)	No information available	FIOH	?
Mental diseases and Behavioural disorders****	None	None	No information available		-
Occupational Cancer	79 M 75 (95 %) F 4 (5 %)	79 M 75 (95 %) F 4 (5 %)	No information available	FIOH	?
Other diseases*****	575 M 502 (87 %) F 73 (13 %)	551 M 479 (87 %) F 72 (13 %)	No information available	FIOH	?
Total number	1625 M 1226 (75 %) F 399 (25 %)	1489 M 1151 (77 %) <b>F 338 (23 %)</b>	No information available	<b>FIOH</b>	?

Notes:

FIOH = Recognized and suspected occupational diseases 2014, Annual Report, The Finnish Institute of Occupational Health, 2017. Available at: <https://www.julkari.fi/handle/10024/132321>

\* includes for example all noise-induced hearing losses and hand arm vibration syndromes

\*\* includes infectious and parasitic diseases

\*\*\* includes MSD (repetitive strain injuries) and carpal tunnel syndrome

\*\*\*\* these diseases are not included in the Finnish list of ODs.

\*\*\*\*\* includes for example noise induced hearing loss, hand arm vibration syndrome, infectious diseases, toxic encephalopathy, decompression sickness, anaphylaxis.

## 4.4 Germany

Table 4.5 Number of OD in Germany<sup>50</sup>

Categories	Year: 2015		Year: 2014		Year: 2013		Source number of OD	Estimated degree of under- reporting * (0,1,2)
	Number		Number		Number			
	Notification	Recognition	Notification	Recognition	Notification	Recognition		
	(gender distr.) **		(gender distr.) **		(gender distr.) **			

<sup>50</sup> (Source: Bundesministerium für Arbeit und Soziales (BMAS) in cooperation with Bundesanstalt für Arbeitsschutz und Arbeitsmedizin (BAuA): „Sicherheit und Gesundheit bei der Arbeit 2015“ - Unfallverhütungsbericht Arbeit, S. 98ff ).

Categories	Year: 2015		Year: 2014		Year: 2013		Source number of OD	Estimated degree of under-reporting * (0,1,2)
	Number		Number		Number			
	Notification (gender distr.) **	Recognition	Notification (gender distr.) **	Recognition	Notification (gender distr.) **	Recognition		
Diseases caused by Chemical agents	3871	603	3780	559	3776	523	1	0
Diseases caused by Physical agents	24723	7682	22852	7735	23392	7981	2	0
Diseases caused by Biological agents	3020	1181	3364	1393	3224	1262	3	0
Respiratory diseases	16552	5514	16305	5681	16381	5496	4	0
Skin diseases ***	32149	2743	24818	652	24802	637	5	0
Musculoskeletal diseases ****	12045	1232	10308	1010	10377	972	2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114	0
Mental diseases and Behavioural disorders							–	
Occupational Cancer	17166	4491	9258	2523	8945	2317	1301, 1318, 1319, 4104, 4105, 4109, 4110, 4113, 4114, 4203, 5102, 5103	0
Other diseases	–	–	3	1	7	–	6 (only 6101 Miners' Nystagmus)	0
Open clause cases (SGB VI, § 9 Abs. 2)	1387	310	3979	938	3098	499		?
<b>Total number</b>	<b>81702</b>	<b>18042</b>	<b>75102</b>	<b>16969</b>	<b>74680</b>	<b>16413</b>		

\*\* gender distribution not available.

\*\*\* only recognized for compensation, if the causative exposition has been terminated (change of job), else other measures of support.

\*\*\*\* 2101, 2104, 2108, 2109, 2110 recognized as OD only if causative exposition has been terminated.

## 4.5 Latvia

**Table 4.6 Number of OD in Latvia<sup>51</sup>**

Categories	Year: 2014 Number (gender distr.)	Year: 2015 Number (gender distr.)	Year: 2016 Number (gender distr.)	Source number of OD	Estimated degree of under- reporting* (0,1,2)
Diseases caused by Chemical agents	22	13	15		2
Diseases caused by Physical agents	790	842	1231		1
Diseases caused by Biological agents	6	3	2		2
Respiratory diseases	11	10	16		1
Skin diseases	20	9	7		2
Musculoskeletal diseases	964	945	1062		1
Mental diseases and Behavioural disorders	13	11	10		2
Occupational Cancer	-	3	3		2
Other diseases	-	-	-		1
<b>Total number</b>	<b>1217</b>	<b>1154</b>	<b>1364</b>		<b>2</b>

## 4.6 Lithuania

**Table 4.7 Number of OD in Lithuania<sup>52</sup>**

	Year: 2012 Number (gender distr.)	Year: 2013 Number (gender distr.)	Year: 2014 Number (gender distr.)	Year: 2015 Number (gender distr.)	Year: 2016 Number (gender distr.)	Source number of OD	Estimated degree of under- reporting* (0,1,2)
Diseases caused by Chemical agents (registered with acute respiratory diseases)			M-7 W-9	M-3 W5	M-2 W4	1	1
Diseases caused by Physical agents			M-289 W-18	M-216 W-14	M-2050 W-9	1	2
Diseases			M-3	M-5	M-2	1	2

<sup>51</sup> Source: Annual report 2015 of State Labour Inspectorate (in Latvian), OD statistics from page 52: [http://vdi.gov.lv/files/vdi\\_gada\\_parskats\\_2015.pdf](http://vdi.gov.lv/files/vdi_gada_parskats_2015.pdf).

Annual report 2016 of State Labour Inspectorate (in Latvian), OD statistics from page 53: [http://vdi.gov.lv/files/vdi\\_gada\\_parskats\\_2016.pdf](http://vdi.gov.lv/files/vdi_gada_parskats_2016.pdf).

<sup>52</sup> In Lithuania we have Annual Reports of the registered OD, performed by the State Registry of Occupational Diseases (ROD): <http://www.hi.lt/lt/plr-statistine-informacija.html>

	Year: 2012 Number (gender distr.)	Year: 2013 Number (gender distr.)	Year: 2014 Number (gender distr.)	Year: 2015 Number (gender distr.)	Year: 2016 Number (gender distr.)	Source number of OD	Estimated degree of under- reporting* (0,1,2)
caused by Biological agents			W-1	W-4	W-5		
Respiratory diseases (only caused by VGDF)			M-8 W-8	M-9 W-6	M-4 W-8	1	2
Skin diseases			M-1 W-8	M-1 W-4	M-2 W-5	1	2
Musculoskeletal diseases			M-209 W-69	M-189 W-91	M-190 W-117	1	2
Mental diseases and Behavioural disorders			Not registered	M-0 W-1	Not registered	1	2
Occupational Cancer			M-1 W-0	Not registered	M-1 W-0	1	2
Other diseases (occupational allergic diseases)			M-137 W-33	M-106 W-30	M-99 W-35	1	2
<b>Total number</b>			<b>M-356 W-118</b>	<b>M-305 W-132</b>	<b>M-296 W-165</b>	<b>1</b>	<b>2</b>

#### 4.7 Norway

Table 4.8 Number of WRD in Norway

Categories	Year: 2014 Number (gender distr.)	Year: 2015 Number (gender distr.)	Year: 2016 Number (gender distr.)	Source number of OD	Estimated degree of under- reporting* (0,1,2)
Diseases caused by Chemical agents	128 M89 F39	73 M48 F25	80 M59 F21		2
Diseases caused by Physical agents	1755 M1586 F165 Unknown 4	1425 M1312 F96 Unknown 17	1305 M1177 F110 Unknown 18		2
Diseases caused by Biological agents	123 M63 F60	92 M 55 F 37	124 M53 F69 Unknown 2		2
Respiratory diseases	311 M209 F102	294 M222 F72	270 M205 F64 Unknown 1		2
Skin diseases	137	133	142		2

Categories	Year: 2014	Year: 2015	Year: 2016	Source number of OD	Estimated degree of under-reporting* (0,1,2)
	Number (gender distr.)	Number (gender distr.)	Number (gender distr.)		
	M70 F67	M64 F69	M63 F76 Unknown 3		
Musculoskeletal diseases	288 M178 F110	197 M130 F67	190 M126 F63 Unknown 1		2
Mental diseases and Behavioural disorders	146 M56 F90	138 M50 F88	145 M44 F101		2
Occupational Cancer	98 M90 F8	85 M82 F3	81 M81		2
Other diseases	1898 M1675 F218 Unknown 5	1550 M1369 F163 Unknown 18	1524 M1279 F224 Unknown 21		2
<b>Total number</b>	<b>2878</b>	<b>2397</b>	<b>2352</b>		

Comment: The figures from Norway are coming from the Norwegian Registry for Work Related Diseases, managed by the Labour Inspectorate. Since there is no other data provided, we use them as the figures for OD, with the remark that these data do not refer to formally recognized OD.

## 4.8 Poland

Table 4.9 Number of OD in Poland<sup>53</sup>

Categories	Year: 2014		Year: 2015		Year: 2016		Source number of OD	Estimated degree of under-reporting* (0,1,2)
	Number (gender distr.)		Number (gender distr.)		Number (gender distr.)			
	M	F	M	F	M	F		
Diseases caused by Chemical agents	54	61	54	58	48	52	see above	1
Diseases caused by Physical agents	1067	483	853	464	997	440		1
Diseases caused by Biological agents	428	258	390	275	364	218		1
Respiratory diseases	686	45	500	50	671	49		2
Skin diseases	37	56	31	48	22	43		2
Musculoskeletal diseases	47	51	44	59	45	71		2
Mental diseases and Behavioural disorders								
Occupational Cancer	68	12	60	8	63	3		1
Other diseases	711	638	662	632	608	544		1
<b>Total number</b>	<b>1549</b>	<b>802</b>	<b>1297</b>	<b>797</b>	<b>1409</b>	<b>710</b>		

<sup>53</sup> All numbers were given by National Registry of OD in Poland.

## 4.9 Russian Federation

Table 4.10 Number of OD in Russian Federation<sup>54</sup>

	Year:2012 Number (gender distr.)	Year:2013 Number (gender distr.)	Year:2014 Number (gender distr.)	Year:2015 Number (gender distr.)	Year: 2016 Number (gender distr.)	Source number of OD	Estimated degree of under- reporting* (0,1,2)
Diseases caused by Chemical agents (registered with acute respiratory diseases)	454 M 351 F 103	522 M 386 F 136	494 M 375 F 119	404 M 302 F 102	458 M 371 F 87	1, 2	1
Diseases caused by Physical agents	3748 M 3572 F 176	3811 M 3608 F 203	3692 M 3453 F 239	3620 M 3433 F 187	3128 M 2960 F 168	1, 2	2
Diseases caused by Biological agents	308 M 130 F 178	224 M 92 F 132	178 M 59 F 119	172 M 61 F 111	174 M 59 F 115	1, 2	2
Respiratory diseases (only caused by VGDF)	1371 M 1138 F 233	1496 M 1275 F 221	1386 M 1139 F 247	1306 M 1116 F 190	1037 M 846 F 191	1, 2	2
Skin diseases			Not registered separately	Not registered separately	Not registered separately	1, 2	2
Musculoskeletal diseases	1812 M 1440 F 372	1941 M 1551 F 390	1987 M 1588 F 399	1748 M 1427 F 321	1616 M 1404 F 212	1, 2	2
Mental diseases and Behavioural disorders	Not registered	Not registered	Not registered	Not registered	Not registered	1, 2	2
Occupational Cancer	31 M 28 F 3	36 M 32 F 4	35 M 31 F 4	24 M 21 F 3	30 M 29 F 1	1, 2	2
Other diseases (occupational allergic diseases)	183 M 51 F 132	145 M 24 F 121	119 M 29 F 90	137 M 36 F 101	102 M 26 F 76	1, 2	-
<b>Total number</b>	<b>7907</b> <b>M 6113</b> <b>F 1794</b>	<b>8175</b> <b>M 6045</b> <b>F 2130</b>	<b>7891</b> <b>M 6674</b> <b>F 1217</b>	<b>7410</b> <b>M 6396</b> <b>F 1014</b>	<b>6445</b> <b>M 5695</b> <b>F 850</b>	1, 2	2

<sup>54</sup> Sources:

1 - State report "On the sanitary-epidemiological wellbeing of the population in the Russian Federation in 2016".

2 - Unpublished officially data from Federal Service for Supervision of Consumer Rights Protection and Human Welfare

/"Statistical compendium on the state of occupational morbidity in the Russian Federation" for 2012-2016.

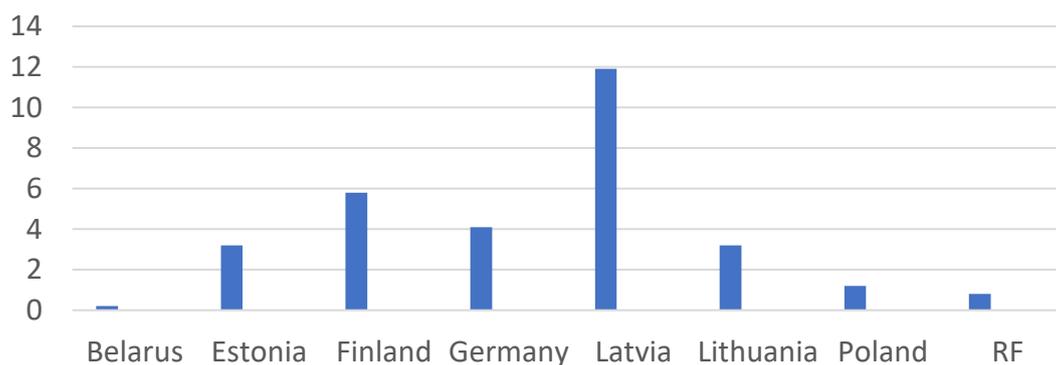
## 4.10 Sweden

The trends for Occupational Disease (OD) and Work Related Disease (WRD) are difficult to estimate for Sweden. The national statistics are based on filed claims instead of approved OD and WRD. The system is open and not based on the ILO list nor any fixed criteria for diagnosis other than ICD. Försäkringskassan inquest filed cases further that might have economic consequences. Economical compensation regarding sick leave are not different for an OD or WRD compared to diseases of other causes.

## 4.11 General comments

In general, Finland, Germany presented the most consistent figures of OD, which is in line with the comprehensiveness and development of their registries. In the overall reported IR, Latvia exceeds Finland. This might be caused by the fact that the systems of Latvia is less restrictive, so that also WRD can be reported, which leads to a higher number of notifications. This also goes for Sweden and Norway (with a reported number of OD in 2015 of > 12,000), although Sweden are not represented in the tables of OD in this chapter.

**Figure 4.1 Officially reported Incidence rates of OD (total), cases/10,000 workers**



An interesting observation is the difference between countries in incidence rate of OD caused by chemical agents. In Finland, the incidence rate is about 3 cases/10,000 workers/year, whereas in all other countries the incidence rate is less than 0.2. The Finnish expert could not give an estimate of the degree of underreporting, whereas the experts from other countries estimated the degree of underreporting from 0 (little of no underreporting) to 1 (underreporting < 50%) and 2 (underreporting > 50%). Diseases caused by physical agents have the highest reported incidence in Norway, followed by Finland, Germany and Lithuania, whereas diseases caused by biological agents have the highest reported incidence in Poland. For respiratory diseases and skin diseases, Finland, Norway and Germany show the highest incidence rates. Lithuania has a much higher incidence rate of musculoskeletal diseases than the other countries, which goes for Germany in case of occupational cancer.

There is no obvious pattern in the variation between countries concerning incidences of categories of occupational diseases and it might be concluded that different figures are more due to national characteristics of registries than real differences in incidences of occupational diseases. The nature of these characteristics is beyond the scope of this study.

#### 4.12 Calculation of OD's in the participating countries using the Realloc-1 method

The Realloc-1 approach was a thought experiment to calculate the hypothetical number of OD that would be expected to occur if the whole labour force of a country were employed in a bench-mark country. The calculated figures are compared to the reported figures.<sup>55</sup> The estimated degree of underreporting is calculated as follows:  $[1 - \text{reported number} / \text{calculated number}]$ . A negative number means that there might be over reporting, e.g. because WRD are also accepted in the registry. A degree of underreporting of 0.85 means that 85% of the OD is not reported.

**Table 4.11 An overview of underreporting OD**

Country	Calculated number	Reported number	Degree of underreporting
Finland	1,489	1,489	0
Sweden	2,960	12,088	-3.08
Norway	1,517	920**	0,39
Russian Federation	41,819	6,334	0.85
Belarus	2,515	93	0.96
Poland	9,496	2,094	0.78
Germany	23,807	18,042	0.25
Lithuania	725	437	0.40
Estonia	384	158	0.59
Latvia	539	1,154	-1.14
<b>Total</b>	<b>85,251</b>	<b>42,809</b>	<b>0.50 (0,61)*</b>

Notes:

\*with correction for over reporting.

\*\* 920 cases were compensated on average per year in the period 2004-2007 in Norway

#### 4.13 Calculation of WRD's in the participating countries using the Realloc-2 method

The Realloc-2 approach is based on multiplication of the figures of OD with a coefficient. We used 67 as the coefficient. We used the calculated number of OD from the Realloc-1 method to calculate the figures for WRD.

**Table 4.12 An overview of under reporting WRD**

Country	Calculated number of OD	Calculated number of WRD
Finland	1,489	99,763
Sweden	2,960	198,320
Norway	1,517	101,639
Russian Federation	41,819	2,801,873
Belarus	2,515	168,505
Poland	9,496	636,232
Germany	23,807	1,595,069
Lithuania	725	48,575

<sup>55</sup> It should be realized that in most countries the reported numbers represent the number of recognized cases. E.g. due to the current German legislation, there is a considerable number of lung, skin and muscular skeletal disease cases that are not recognized as long as the causing exposure is not discontinued (exposure cessation requirement for (OD no. 1315, 2101, 2104, 2108, 2009, 2110, 4301, 4302, 5101). The afflicted employees receive all necessary treatment and retraining measures for another profession, i.e. the work-relatedness is recognized, but the requirement for case recognition as an OD is not fully met and therefore at present not followed by entry into the OD statistic. (The requirement of exposure cessation for recognition is under discussion and likely to be amended).

Country	Calculated number of OD	Calculated number of WRD
Estonia	384	25,728
Latvia	539	36,113
<b>Total</b>	<b>85,251</b>	<b>5,711,817</b>



## 5 Discussion

The research questions, formulated on the basis of the ToR were the following:

- How are OD, WRD and ER recorded in the participating countries?
- What is the estimated incidence rate of OD and WRD in the participating countries?
- How can reporting of OD, WRD and ER be improved?
- How can training and education of occupational health experts be improved to increase prevention and detection of work-related and occupational diseases?

The country experts gave a description of the way OD, WRD and ER are recorded in the participating countries in Chapter 3. The conclusion is that traditional national registries of occupational diseases have major shortcomings for the provision of information for preventive policy on OD, WRD and ER. Registers do not provide reliable figures. For OD the figures from Finland and Germany might approximate the real figures, but even these registers are unreliable.

In general, a national list of diseases is the basis of reporting OD. A few countries have more or less open lists<sup>56</sup>, like Finland, Norway and Germany. Sweden has no official list, so that in practice the OD system is open in Sweden. In the other countries, the lists are more closed, although there are of course options to include new diseases in the list. Germany has detailed and comprehensive criteria for occupational diseases, whereas other countries have limited (e.g. for some diseases) or no criteria for the diagnosis of OD.

The lists of the participating countries contain more or less the same categories of diseases and the structure roughly resembles the ILO and EU-list. Nevertheless all countries have their own lists, which differ on details. An OD recognized by one country, will not automatically lead to recognition in another country. Some countries (Finland, Sweden, Norway and Germany) maintain the principle of evidence based medicine for recognition of OD. In the Russian Federation and Belarus experience based decisions seem to be more prevalent. In some countries, e.g. Russian Federation, also some work related diseases are included in the list.

In spite of these shortcomings, we made estimates of the number of OD in the participating countries. A rough estimate of the Incident rate (IR) of OD is 5.5 cases per 10,000 workers. Rough estimates of WRD has been made on the basis of the rate between OD and WRD, which resulted in a coefficient of 67, meaning that the number of OD must be multiplied with 67 to get the estimate of WRD.

A strong point of this study is that we asked our experts, who are very much involved in reporting OD in their own country, to deliver data on the process of recording data and pros and cons of this process. Furthermore, the country expert team had several in-depth discussions during the expert meetings as part of the project. A strong disadvantage for estimating incidence rates of OD and WRD is the poor reliability of the existing figures on OD in the participating countries. Even in Finland and Germany, two countries with quite comprehensive registers of OD, the figures are unreliable. In none of the countries, WRD are registered systematically. In some countries, there are projects for identifying ER, but in general the detection of ER is very limited.

---

<sup>56</sup> Open list of OD: not limited to a defined number of diseases, but recognition can also take place for diseases not on the list if satisfactory evidence is provided for the case.

The choice of Finland as the reference country for estimating OD is based on the fact that Finland has a quite well developed system for registry of OD. It needs to be realized that the figure is based on notified and recognized cases, and that underreporting is a problem in that country, as well. We also note that in Germany some OD cases are not recognized because of legal restrictions. The real figure of OD will be higher, but since we have no reliable data on under-reporting the Finnish data will be managed as “best in class”. The estimate of WRD is even more awkward. WRD is a broad concept, ranging from epidemiological associations between exposures and diseases to recognized OD. We used a multiplier of 67, derived from data from the UK, because reliable data on WRD are not available and the UK has a quite well developed system of estimating WRD.

By way of conclusion, it needs to be emphasized that there are substantial differences between the UK's economic structure and its labour market as compared to the countries for which the relevant data were extrapolated from the UK figures. Within the constraints of this study, however, it was not possible to take these differences into account. It might be expected that e.g. in countries where industry still dominates, the number of work-related musculoskeletal diseases is higher than our estimation suggested, whereas in countries with a large tertiary sector work-related stress is more prominent.

Important barriers for diagnosing occupational diseases are lack of knowledge of doctors and socio-economic factors like fear of the worker to get fired and dependency of the occupational physician of the employer. Training and education of occupational physicians as well as evidence-based guidelines for diagnosis of occupational and work related diseases are mentioned as improvement by several rapporteurs. Some of them advocated the provision of more information to employers and employees. In most of the participating countries, except for Belarus and Estonia, the country experts were of the opinion that the level of knowledge on OD, WRD and ER should be improved. Also periodic exposure assessment and periodic health examination might encourage registration of OD and WRD. Options for improvement of prevention that are mentioned by the country experts are a national strategy, more skilled occupational health and safety staff and preventive programmes. A general opinion was that the focus of OHS should shift from mandatory examinations to preventive activities.

The literature on OD and WRD presents several ways to improve the reporting of OD, WRD and ER. In general, the changing pattern of occupational diseases requires a transition of traditional registries to more flexible and dynamic systems (Spreeuwiers, 2008). To monitor occupational diseases for preventive aims a dynamic set of instruments is needed. In addition to a number of registries, projects connected to these registries can be executed, e.g. to obtain more information on exposure patterns or course and consequences of occupational diseases in a certain sector. Whereas the incidence of OD can be measured in number of cases (with clear case definitions), WRD might be better expressed in other epidemiological measurements, such as attributable fractions of work to the burden of diseases.

Tracing new risks and newly occurring occupational diseases require different methods, for which lessons can be learned from methods used in pharmacovigilance (Agius et al, 2015). Clear preventive strategies and an ongoing dialogue between providers of figures and stakeholders involved in prevention is a prerequisite for achieving results in prevention. Training and education is considered an important tool to improve reporting of OD, WRD and ER, although the effect turned out to be limited in a review by Curti et al (2016).



# 6 Dissemination plan

## 6.1 Introduction

The work package 3 of the Project **“Better prevention, identification and reporting of work-related and occupational diseases and emerging risks”** concentrates on promoting a better understanding of the significance of prevention of work-related diseases in the NDPHS area but also globally. According to the ToR, the results of the project should be disseminated to relevant parties in the participating countries as well as globally. To ensure the dissemination of the outputs from the project, the Team Leader prepared the following dissemination plan.

The ToR also requests that dissemination and publishing of survey results shall be done in connection with ILO world congress 2017 and ICOH congress 2018 as well as in national seminars and conferences by OSH EG. Results and recommendations are published in articles, electronic newsletters like the NDPHS eNewsletter, the NDPHS website, the NDPHS CSR and PAC and among interested expert groups. The results shall also be shared by the OSH EG in other on-going related researches linked to work-related diseases, such as musculo-skeletal diseases (MSD).

### Messages for dissemination:

The most important messages for dissemination, resulting from the study, are the following:

The primary focus of attention in policy should be on prevention of WRD. This means a twofold shift in policy attention:

- From OD to WRD: Only few participating countries report WRD. We need better information on WRD. Besides case reporting we need other (epidemiological) methods to get information on WRD. However, OD is still an important concept as basis for compensation and promoting fair international competitiveness (no competition on working conditions).
- From compensation to prevention: policy focus must be primarily on prevention, but a good practice for (fair) compensation remains important.

Traditional national registries of occupational diseases have major shortcomings for the provision of information for preventive policy. Therefore, direct comparisons between countries are problematic to a great extent. Trend analysis within countries, however, can be useful to evaluate preventive policy.

Tracing new risks and newly occurring work-related and occupational diseases require different methods, such as sentinel reporting, literature studies, expert opinions and datamining.

Training and education of occupational physicians is considered an important means to improve the reporting of OD, WRD and ER by the rapporteurs. Considering the workplace as the arena of prevention, workers and their supervisors should be trained and educated in improvement of working conditions.

Collecting data on OD, WRD and ER is important for goal setting and evaluation of preventive policy. The focus should not primarily be on getting absolute numbers, rather how to use these figures the best way to support preventive projects?

Of course, each of these messages needs further elaboration, which can be accomplished in the scientific articles and other publications, learning materials, further research etc. The main

messages are also summarised in the standard presentation, which has been made as a deliverable of the project and can be found in the Annex of this report.

An important precondition of changing the policy in the field of OD, WRD and ER is a proper understanding of the concepts, mainly of OD and WRD. We advocate, from the viewpoint of prevention, to focus on identification and registration of WRD, defined as those health problems and illnesses, which can be caused, worsened, or jointly caused by working conditions, rather than focussing on OD. OD are defined as cases recognised by the national authorities responsible for recognition of occupational diseases, which implies that the concept differs from country to country and even over time (because of changes in legislation).

Furthermore, ER are a category of WRD, which needs specific ways of tracking and reporting, for which methods from the field of pharmacovigilance can be used. The concept of OD vigilance can be used in this perspective.

Target groups:

The work package 3 concentrates foremost on promoting a better understanding of the significance of prevention of work-related diseases in the NDPHS area but also globally. Furthermore, the rapporteurs suggested disseminating the results also to international organisations like ICOH, ILO, WHO, the Bilbao Agency etc. Finally, within the participating countries organisations and key opinion leaders need to be identified which can be addressed to disseminate the results or the study.

Methods of dissemination:

An important way of dissemination of the findings of the study will be the publication and distribution of the report and the standard presentation (see in Annex). The report and the standard presentation can be used in events in the participating countries as well as in international conferences. The presentation has already been used at a conference in Ankara, Turkey, which has been positively evaluated by the audience.

Other methods for dissemination can be several events in the participating countries (see the following section of this report), a publication in a peer reviewed occupational health journal and providing an outline for a research plan and training materials.

Expected results:

The main effect to be accomplished by the findings of this report and the dissemination activities is a change in approach of policymakers and professionals in the field of WRD, OD and ER, summarised as a shift of focus from OD to WRD and from compensation to prevention, accompanied by improvement of fair compensation policy. This should result in better data on WRD and ER and more prevention activities.

## 6.2 Concept for first draft of training materials

In the final report, recommendations have been drafted for improvement of reporting systems and for training and education of occupational health experts. Rapporteurs stressed the importance to promote training and education for health professionals, employers, employees and self-employed to reduce WRD, OD and ER.

Important barriers for diagnosing occupational diseases are lack of knowledge of doctors and socio-economic factors like fear of the worker to be dismissed from job and dependency of the occupational physician of the employer. Training and education of occupational physicians as well as evidence-based guidelines for diagnosis of occupational and work related diseases are mentioned as improvement by several rapporteurs. Some of them advocated the provision of more information to employers and employees. In most of the participating countries, the country experts were of the opinion that the level of knowledge on WRD, OD and ER should be improved.

In general, training and education is considered an important tool to improve reporting of WRD, OD and ER, although the effect turned out to be limited in a review by Curti et al (2016). Considering the workplace as the arena of prevention, workers and their supervisors should be trained and educated in improvement of working conditions. In this section, we provide suggestions for training and education for three target groups: 1. Occupational physicians, 2. Employers, employees and self-employed and 3. Policy-makers.

### Training and education of occupational physicians:

The training and education should be focussed on thorough comprehension of the concepts of WRD, OD and ER and how to apply these concepts in practice. A precondition of getting better data on WRD are (international) guidelines for diagnosing WRD on an individual level and development of instruments for identification of WRD on the population level. This requires knowledge of guidelines (ILO guidelines, EU guidelines and national guidelines) for occupational physicians as well as skills of searching the medical literature for finding evidence of work relatedness in individual cases (Evidence Based Medicine (EBM)- training). This means that the vocational training as well as the postgraduate training should comprise extended courses on guidelines for OD/WRD and training in EBM.

To understand and improve the skills for identifying WRD on a population level, occupational physicians need to have an advanced knowledge level in epidemiology. In order to be able to trace possible new relations between work and health occupational physicians need proper training in methods for case research, at which providing (many) available examples is important.

Finally, skills in prevention methods and communication are important to improve prevention of WRD. On an individual level, counselling skills are also needed to inform workers on the possible impact of hazards in the workplace. Occupational physicians need intensive training and education on all of these topics. For other health professionals, training and education can be developed for parts of this package.

In summary, vocational and post-graduate training needs to contain:

- Training in the theoretical background of the concepts of WRD, OD and ER;
- Training in guidelines and application of guidelines for WRD/OD;
- Training in EBM focussed on WRD;
- Advanced training in epidemiology;
- Training in case research for tracing new relations between work and health;
- Training in prevention and communication methods and skills.

*Training and education of employers, employees and self-employed:*

Considering the workplace as the arena of prevention, employers, employees and self-employed should be addressed for training and education in the field of prevention. We advocate developing practical tools and training modules on several topics concerning prevention of WRD. In many countries, tools for training and education of employees already exist. Toolboxes are also provided by several national and international organisations: for example, in the UK toolboxes are provided by HSE (see: <http://www.hse.gov.uk/toolbox/index.htm>), on a European level toolboxes are provided by EU-OSHA (<https://osha.europa.eu>). In addition, in some of the participating countries in this project, toolboxes are available for prevention focussed on employers and employees.

*Training and education of policy-makers:*

Good comprehension of the concepts of WRD, OD and ER by policy-makers is important to support the advocated shift in focus from OD to WRD and from compensation to prevention and promoting fairer compensation and prevention of competition on working conditions.

Experts in occupational health should support decision makers to move towards better prevention of WRD, fair compensation of collateral damage of work and creating an economic level playing field without competition on (bad) working conditions. Workshops with experts and policy-makers can help to develop another attitude and way of thinking on WRD, OD and ER.

### 6.3 Research concept on work-attributable fractions of work-related diseases

Epidemiological studies, like cohort or case control studies, are needed to get more information on WRD. Comparisons between incidences of diseases in sectors or job titles can complement the knowledge on WRD, as well as estimates of attributable fractions of work for disease categories.

It needs to be realised that OD can be presented as a number of cases, whereas for WRD, this is more difficult. It is for example not easy to select individual cases of work related cardiovascular diseases, whereas on a population level this can be expressed as the attributable fraction of the total burden of cardiovascular diseases. This approach has been used for example in the WHO Project Global Burden of Disease, where the attribution of several causal factors, of which work was one of them, has been expressed in DALY's.

Comparisons between incidences of diseases in sectors or job titles to provide attributable fractions of work can complement the knowledge on WRD, as well as estimates of attributable fractions of work for disease (categories). A data linkage of sickness absence data (duration and disease code) with employment data per sector of industry will provide information on the possible work-relatedness of a disease and at the same time show the magnitude of the health problem in economic context and as well as the preventive potential. Furthermore, it is important to take into account the impact of a disease (health impact, economic impact, duration, etc.), e.g. in terms of epidemiological metrics like DALY's or QALY's. The approach helps to set strategic goals and to prioritise resources.

Possible approaches for collecting international data on WRD could be:

1. Establishing an international database of epidemiological studies on WRD with a critical appraised topics (CAT-) guide and periodical publications on recent results.
2. Making an inventory of databases that could be used for collecting data on WRD in the participating countries. Next steps are selection of promising databases and processing data to assess relationships between work determinants (job titles, sectors, if available exposure data) and health outcomes.
3. Comparative study in the participating countries using questionnaires to assess health complaints in certain sectors and job titles in employees and self-employed workers.
4. Sentinel surveillance projects focussed on specific diseases or disease categories (e.g. MSD or psychosocial disorders), with assessment of (estimated) underreporting and calculation of Incidence rates in occupational groups.

## 6.4 Dissemination plan and publishing of the report

According to the ToR (WP3), the results of the project should be disseminated to relevant parties in the participating countries as well as globally. The plans and events per country are provided by the national rapporteurs in the project and can be found in Chapter 2. The general activities of dissemination are described in this chapter.

In collaboration with Modernet, an international network on improvement statistics on OD and WRD and tracing ER and EU-funded project “Strengthening the Occupational Health Expertise and Scientific Performance of Public Health Institution of Turkey” (ESPrIT), the Team Leader has already presented the results of the Better Prevention project in Ankara on 6 November 2018 during the closing conference of the ESPrIT project.

The report will be distributed to EU bodies like EU OSHA, Eurostat and to the Commissioner for Health and for Labour, ILO, WHO OHS and WHO central and EU Central Labour Union will be addressed. We should also inform the secretariat of NDPH from NDPH OSH and ask the secretariat to send letters to the member states with the report asking for comments on how the participating countries plan to improve the situation, asking for plans for the future are generally productive concerning a reply – and it may lead to further discussions. A notice to ICOH should also be sent summarising the main results and further information how to obtain the report. Modernet network members should also receive copies of the report.

Furthermore, a scientific article will be prepared for publication in a peer-reviewed journal to distribute the results of the project. The Team Leader will take the initiative for the publication in collaboration with the country rapporteurs.

## 6.5 Dissemination plans in participating countries

### 6.5.1 Belarus

The dissemination plan for Belarus includes the following elements and it targets to reach the following recipients with the project results:

- Ministry of Labour and Social Protection of the Republic of Belarus <http://www.mintrud.gov.by>;
- Medical institutions at enterprises (all enterprises have departmental medicine) – lectures for doctors are held about twice a month, project results can be discussed during lectures.
- Accident Insurance;
- Labour Inspectorates;
- National Centre for Labour Protection of the Ministry of Labour and Social Protection of the Republic of Belarus: [www.rcot.by](http://www.rcot.by);
- University of Civil Protection, Ministry of Emergency Situations of Belarus <http://ucp.by/en/>;
- Belarusian State Medical University (Department of Occupational Health);
- Presentation of project results at various meetings and conferences in Belarus.
- Publication of articles about project results in Medical journals («Healthcare», «Labour Protection», «Labour Protection and Safety Technology», «Herald of Medicine»).
- International electronic library: <https://elibrary.ru/> The final report can be translated into Russian and placed in the international electronic library. This is planned to be done by May 2019 when the 3<sup>rd</sup> International Scientific and Practical Forum “Health and Safety at the Workplace” will take place.

- The 2<sup>nd</sup> International Scientific and Practical Forum "Health and Safety at the Workplace" was organised in Minsk on 6-8 June 2018. At this event, the country expert disseminated and promoted best practices and recommendations on the significance of prevention of work-related and occupational diseases in a national context.

### 6.5.2 Estonia

The planned steps and targeted recipients for dissemination in Estonia are as follows.

- Estonian Health Board, <http://www.terviseamet.ee/en/health-care/occupational-health.html>;
- Estonian Health Insurance Fund, <https://www.haigekassa.ee/en/>;
- Labour Inspectorate, <http://www.ti.ee/en/contacts/>;
- Statistics Estonia, <https://www.stat.ee/contacts/>;
- Estonian Association of Occupational Physicians, <http://ettas.ee/>;
- The OH and Safety meetings and conferences in Estonia (local and international);
- Estonian Ministry of Social Affairs, [www.sm.ee/en/](http://www.sm.ee/en/);
- Social partners - Estonian Trade Union Confederation (ETUC), <https://www.eakl.ee/contact>;
- Estonian Employers Confederation (EEC), <https://www.employers.ee/en/>;
- Publication of joint research article on OD data comparison between the countries (upon permission of Team Leader and country experts).
- The project results can be included into the training programmes in the universities:
  - Estonian University of Life Sciences, [www.emu.ee/](http://www.emu.ee/);
  - The bachelor and master studies in ergonomics;
  - OHP residential studies (courses on OH theory and practice);
  - Post-graduate education of OH-specialists University of Tartu, [www.ut.ee/](http://www.ut.ee/);
  - Pre-graduate teaching of environmental and occupational health in the Faculty of Medicine;
  - Master studies on Public Health.

### 6.5.3 Finland

The complete set of project results is proposed to be disseminated to the following institutes:

- Finnish Institute of Occupational Health, [www.ttl.fi](http://www.ttl.fi);
- Finnish Workers' Compensation Centre, [www.tvk.fi](http://www.tvk.fi);
- Statistics Finland, [www.stat.fi](http://www.stat.fi);
- Finnish Association of Occupational Physicians, [www.stly.fi](http://www.stly.fi);
- Various meetings and conferences in Finland

The Finnish Ministry of Social Affairs and Health will inform the social partners about the project results in the Advisory Committee on Occupational Safety and Health.

The project results can be disseminated in various meetings and conferences in Finland on ad hoc basis.

### 6.5.4 Germany

The recipients of the project results in Germany can be relevant national actors in charge of decision-making, planning, coordination, evaluation in the framework of the joint German OSH strategy:

- National Occupational Health and Safety Conference;
- Federal Government;

- German National Institute for OSH;
- German Social Accident Insurance (DGUV) – a referenced summary report can be offered to be published in its newsletter;
- Labour Inspectorates;
- Universities and individual researchers working in the OSH field;
- German Federal Institute for Occupational Safety and Health (BAuA) – a referenced summary report can be offered to be published in its newsletter

To disseminate the project results among German public bodies, the reporter proposes the following:

- To draft a short project summary, based on the final report, and send it together with the full report to the president of the Federal Institute for Occupational Safety and Health (BAuA); The summary report is for use in the widely read BAuA Newsletter, whereas the full report might stimulate further research and enable contact to team leader and national contributors;
- To draft a short project summary, based on the final report, and send it together with the full report to relevant colleagues (international affairs, epidemiology, occupational diseases) at the Statutory Accident Insurance Institution (DGUV) for further use in Newsletter and for enabling personal contact and further research;
- To send the final report to the chairs of Occupational Medicine at several German universities:
- To possibly present the project at a national or international conference.

#### 6.5.5 Latvia

The plan for dissemination in Latvia is as follows:

- Short article will be prepared with summary of findings on the project and recommendations for the project in Latvian language and will be posted in national OSH web page [www.stradavesels.lv](http://www.stradavesels.lv) (having more than 250 unique users per day);
- The full report will be added to Material database of national OSH web page [www.stradavesels.lv](http://www.stradavesels.lv);
- The report will be submitted to 2 ministries in charge for workers' well-being as well to institutions with supervisory function:
  - Ministry of Welfare ([www.lm.gov.lv](http://www.lm.gov.lv));
  - Ministry of Health ([www.vm.gov.lv](http://www.vm.gov.lv));
  - State Labour Inspectorate ([www.vdi.gov.lv](http://www.vdi.gov.lv));
  - State Health Inspectorate ([www.vi.gov.lv](http://www.vi.gov.lv));
- The report will be sent to social partners for dissemination in their networks:
  - Latvian Employers' Confederation ([www.lddk.lv](http://www.lddk.lv));
  - Latvian Free Trade union ([www.lbas.lv](http://www.lbas.lv));
- The report will be sent to external Occupational health services (employing OSH doctors and involved in health surveillance and reporting) (currently there are approximately 70 of such organisations);
- The results will be presented at the bi-annual conference of occupational health and medicine doctors (planned to be held in March 2019) attended on average by 220-250 doctors (approximately 20-30 minute presentation is planned).

### 6.5.6 Lithuania

Project results are proposed to be disseminated to the following institutes:

- Lithuanian Institute of Hygiene, Occupational Health Centre, <http://www.hi.lt/profesines-sveikatos-centras.html>;
- Statistics Lithuania, <https://www.stat.gov.lt/>;
- National Social Insurance Fund of Lithuania, <http://www.sodra.lt/en/>;
- Lithuanian Employers Confederation, <http://www.darbdaviai.org/lt>;
- National Health Insurance Fund under the Ministry of Health, <http://www.vlk.lt/sites/en/>;
- State Labour Inspectorate, [https://www.vdi.lt/Forms/Tema.aspx?Tema\\_ID=50](https://www.vdi.lt/Forms/Tema.aspx?Tema_ID=50);
- Network of occupational health and safety specialists and experts: <http://www.hi.lt/lt/darbuotoju-sveikatos-stiprinimo-tinklaveika.html>

The project results will be also disseminated in various meetings and conferences in Lithuania:

- National seminar on Better Prevention and Registering of Occupational Diseases in Lithuania, organised by Occupational Health Centre (Institute of Hygiene) inviting national OSH experts from Central Commission of Occupational Medicine Experts, Occupational medicine Physicians, family doctors, participating in health examinations, 2018/2019.
- During 2018, the special working group of specialists have been assigned and they revised special legal act "Criteria for OD diagnosis", 2007-12-29, Nr. V-1087, and new criteria is expected to be approved by the Ministry of Health.
- Training and education in different cities of Lithuania about OD and WRD during the seminars and information days; conferences at national and international level, among them on topic "Prevention of psychosocial risks at workplaces" in 2018. Target group of the training and education activities can be health promotion and prevention experts, occupational health physicians and institutions, victims of occupational and work-related diseases etc.

### 6.5.7 Norway

The plan for dissemination in Norway is as follows:

- A copy of the report will be sent to the Labour Inspectorate of Norway, to the Ministry of Labour which has the responsibility for Norway's OD decisions, to NAV not publishing their data, and to the Ministry of Health handling the NDPH.
- Furthermore, the Occupational Physicians organisation will receive a notice and relevant colleagues in the Labour Union and the Employers' Confederation should be informed about the project results.

### 6.5.8 Poland

The project will be disseminated by:

- Nofer Institute of Occupational Medicine – [www.imp.lodz.pl](http://www.imp.lodz.pl), including Polish Registry of Occupational Diseases;
- Polish Society of Occupational Medicine - <http://ptmp.org.pl/> and its regional offices.

The data from the project will be presented at conferences and meetings of occupational physicians, conferences. Project data and results will be integrated in the curricula of postgraduate training of physicians specialising in occupational medicine.

A copy of the report will be sent to the Labour Inspectorate, Sanitary Inspection (responsible in Poland for final administrative decisions on occupational diseases) and to the Ministry of Health.

The project will be also disseminated through documents prepared for Ministry of Health and other governmental agendas.

### 6.5.9 Russian Federation

The dissemination plan for the Russian Federation is as follows:

The possible dissemination places could be the following:

- Ministry of Health (<https://www.rosminzdrav.ru/>);
- Ministry of Labour and Social Protection (<https://rosmintrud.ru/eng/>);
- Federation of Independent Trade Unions of Russia (<http://www.fnpr.ru/>);
- The Federal State Budgetary Scientific Institution "Izmerov Research Institute of Occupational Health» ([irioh.ru](http://irioh.ru/));
- The Federal Budgetary Institution of Science "Federal Research Center of Hygiene named after F. F. Erisman" (<https://www.fferisman.ru/>);
- Klin Institute of Occupational safety and Working Conditions (<http://www.kiout.ru/>);
- Russian Union of Industrialists and Entrepreneurs (<http://eng.rspp.ru/>)

The complete set of project result package could be sent directly to these institutions. The final report could be sent also to the chairs of Occupational Medicine departments at medical universities.

Project results can be disseminated at meetings and conferences in Russia, the most important of them are:

- (1) All-Russian Week of Occupational Safety, Sochi, 22-26 of April, 2019 (<https://www.vssot.aetalon.ru/>),
- (2) XV "OCCUPATION and HEALTH" Russian National Congress (OHRNC-2019), Samara, 24–27 of September, 2019 (<http://www.congress.niimt.ru/eng/>)

### 6.5.10 Sweden

The dissemination plan in Sweden is as follows:

- Discussions on the conclusions of the project with the international secretariat of the Swedish Work Environment Authority.
- Informing the Social Insurance Agency on the project results.
- It might be possible to present the report for the Ministry of Employment and later perhaps to the Ministry of Social Affairs. This would be a decision taken by the Swedish Work Environment Authority. If they find it suitable, they may publish a summary of the report on their homepage.
- It is possible to publish summary of the report or the whole report on the homepage of the Uppsala University for occupational and environmental medicine (<http://www.amm uppsala.se/english>).
- The country expert can hold seminar at Uppsala university Department of Internal Medicine.
- The project report may be used for undergraduate training purposes.
- The country expert believes there is a need for the publication of an International reviewed paper regarding the different needs and use of statistics on
  - a) occupational disease, for compensation
  - b) work related disease as for information of physicians and other stakeholders and as tool for prevention at the work place and potentially for international comparison within Europe and externally.
  - c) demands development regarding epidemiology and criteria for comparison.

The national expert is ready to participate and contribute as co-author to a paper like that.

## 7 Conclusions

1. The primary focus of attention in policy should be on prevention of WRD. This means a twofold shift in policy attention:

- **From OD to WRD:** Only few participating countries report WRD. We need better information on WRD. Besides case reporting we need other (epidemiological) methods to get information on WRD. However, OD is still an important concept as basis for compensation and promoting fair international competitiveness (no competition on working conditions).

- **From compensation to prevention:** policy focus must be primarily on prevention, but a good practice for (fair) compensation remains important.

2. Traditional national registries of occupational diseases have major shortcomings for the provision of information for preventive policy. When the original, official data collected from the national authorities of the region are presented on a single graph, one can clearly see that the large variations must be spurious to a very great extent (see Figure 4.1). This fact alone suggests that in this part of Europe, there has not been much improvement in data harmonization and collection since the 2003 EC/670/EC report.

4OD are a subcategory of WRD. OD is a social-legal construct with different definitions in the various countries. Therefore, comparisons between countries are not very useful. Trend analysis within countries can be useful to evaluate preventive policy. OD can also be defined as cases in which the etiological fraction of work > 50%, but since it is very difficult to assess the etiological fraction of work in individual cases, this definition is not easy to use. We made a rough estimate of the number of OD in the participating countries by using the Finnish data as best in class, and by applying the figure to the other participating countries (Realloc-1 method). The rough incidence rate is 5.5 cases per 10.000 workers.

5. Using the estimated rate between OD and WRD a coefficient can be calculated to estimate WRD in the participating countries. The calculated coefficient is 67. A rough estimate can be made for WRD in the participating countries using the results of the Realloc-1 estimates and the coefficient.

6. Tracing new risks and newly occurring occupational diseases require different methods, such as sentinel reporting, literature studies, expert opinions and datamining.

7. Training and education of occupational health physicians is considered an important means to improve the reporting of OD, WRD and ER by the rapporteurs. However, the effect of training and education on reporting seems to be limited according a review of Curti et al. Considering the workplace as the arena of prevention, workers and their supervisors should be trained and educated in improvement of working conditions.

8. International collaboration is important to be able to compare WRD between countries and to improve the knowledge on ER.

9. Collecting data on OD, WRD and ER is important for goal setting and evaluation of preventive policy. The focus should not primarily be on getting absolute numbers, but how to use these figures best to support preventive projects.

## 8 Recommendations

To monitor OD and WRD for preventive aims a dynamic set of instruments is needed. In addition to a number of registries, projects connected to these registries can be executed, e.g. to obtain more information on exposure patterns or course and consequences of occupational diseases in a certain sector. Tracing new risks and newly occurring occupational diseases require different methods, for which lessons can be learned from e.g. methods used in pharmacovigilance studies. Clear preventive strategies and an ongoing dialogue between providers of figures and stakeholders involved in prevention is a prerequisite for achieving results in prevention.

### 8.1 Recommendations for improvement of reporting OD

At the moment, definitions of OD are only partly evidence based and criteria vary per country. To increase the validity of registers of OD we need clear evidence based case definitions of OD. If these “**case definitions**” are accepted in different countries then comparisons can be made between countries. The concept of OD remains important for compensation.

In these case definitions, the notion of individual susceptibility has also to be taken into account. We advocate a definition of OD in which the etiological fraction is at least 50% or the Relative Risk  $>2$  (if  $EF < 50\%$  /  $RR < 2$  we call it a WRD). This means that the definition of OD must at least contain criteria for the exposure (nature, duration and intensity), the disease and pre-existent factors that increase individual susceptibility. It must be stressed that the acknowledgement of a disease in an individual should always be based on an individual assessment of exposure and disease and substantiation of the causal relationship.

Even with less reliable registries, **trend analyses** within countries can provide information on changing patterns of OD. Whereas comparisons between countries on absolute numbers cannot be made, comparisons on trends can certainly be made between countries. An interesting example is a recent Modernet study.<sup>57</sup>

**Sentinel surveillance projects** can improve figures of OD. In a sentinel surveillance group comprising of motivated and intensively guided occupational physicians in the Netherlands a seven times higher incidence and a lower proportion of incorrect notifications was found compared to the national registry (Spreeuwiers, 2008). Furthermore, regular **measurements of underreporting** (e.g. samples in the working population) can provide corrections for the official registries to estimate the IR of OD.

### 8.2 Recommendations for getting better information on WRD

ODs are in fact a subcategory of WRD. Especially for WRD with an  $EF < 50\%$  it might not be easy to assess work relatedness on an individual level. Additional methods besides recording individual cases are needed to get a picture of WRD in a country and to make comparisons between countries.

---

<sup>57</sup> Stocks SJ, et al. Trends in incidence of occupational asthma, contact dermatitis, noise-induced hearing loss, carpal tunnel syndrome and upper limb musculoskeletal disorders in European countries from 2000 to 2012. *Occup Environ Med* 2015;0:1–10. doi:10.1136/oemed-2014-102534.

**Epidemiological studies**, like cohort or case control studies, are needed to get more information on WRD. Comparisons between incidences of diseases in sectors or job titles to provide attributable fractions of work can complement the knowledge on WRD, as well as estimates of attributable fractions of work for disease (categories). A data linkage of sickness absence data (duration and disease code) with employment data per sector of industry will provide information on the possible work-relatedness of a disease and at the same time show the magnitude of the health problem in economic context and as well as the preventive potential<sup>58</sup>. Furthermore, it is important to take into account the impact of a disease (health impact, economic impact, duration, etc.), e.g. in terms of epidemiological metrics like DALY's or QALY's. The approach helps to set strategic goals and to prioritize resources.

If we change the focus with respect to OD and WRD **from compensation to prevention**, governments, employers and employees might be more willing to cooperate in getting a better picture of OD and WRD. Therefore a very clear and concise compensation schedule is needed to prevent that compensation issues will hinder the focus on prevention.

### 8.3 Recommendations for improvement of identifying ER

There is an urgent need to develop and study consistent methods that can improve the recognition, validation and sharing of information about new occupational health risks. The European Agency for Safety and Health at Work<sup>59</sup> has used techniques such as **literature reviews**, interviews and **expert consultations** to help identify and predict new and emerging occupational health risks. Notwithstanding such laudable initiatives, direct observation through **sentinel reporting** or surveillance schemes accompanied by expert interpretation is vital to demonstrate early signals of these new hazards and emerging risks. Once a suspicion of a new hazard is raised, targeted 'case-finding' may be warranted to generate a hypothesis for further research and appropriate and timely protection of workers' health (Agius et al, 2015)<sup>60</sup>.

Furthermore, **data mining techniques** can produce new possible relationships between exposures and diseases. See for example the publications from France<sup>61</sup> and Belgium<sup>62</sup> on this issue.

### 8.4 Recommendations for improvement of training and education

Although the effect of training and education on reporting seems to be limited (Curti, 2016), it remains important to promote training and education for health professionals, employers, employees and self-employed to reduce OD, WRD and ER. Considering the workplace as the

---

<sup>58</sup> The Annual BMA Report on Safety and Health at Work is based on the data set of the GKV and on national economic calculations by the Federal Office of Statistics. Taken into account are the persons employed per sector of industry and an average duration of sickness absence. The estimate extends to 100 % of the working population (from the 90 % of the BMG/GKV health insurance data set). The focus is not on a simple case count by diagnosis, but rather on highlighting the magnitude of the problem by shifting the emphasis to the duration of sickness absence due to specified diseases, clustering in certain sectors of industry. Hence, the economic impact and the need for prevention measures become immediately and clearly visible and are easily agreed upon by all actors.

<sup>59</sup> <https://osha.europa.eu/en/about-eu-osha/what-we-do/european-risk-observatory>

<sup>60</sup> Agius R, Lenderink A, Colosio C. Finding 'new' occupational diseases and trends in 'old' ones. Occupational Medicine, Volume 65, Issue 8, 1 November 2015, Pages 607–609, <https://doi.org/10.1093/occmed/kqv110>.

<sup>61</sup> Bonneterre V, et al. Detection of emerging diseases in occupational health: usefulness and limitations of the application of pharmacosurveillance methods to the database of the French national occupational disease surveillance and prevention network (RNV3P). Occup Environ Med 2008;65:32–37. doi:10.1136/oem.2007.033183.

<sup>62</sup> L. Godderis G. Mylle M. Coene C. Verbeek B. Viaene S. Bulterys M. Schouteden. Data warehouse for detection of occupational diseases in OHS data. Occupational Medicine, Volume 65, Issue 8, 1 November 2015, Pages 651–658, <https://doi.org/10.1093/occmed/kqv074>.

arena of prevention, workers and their supervisors should be trained and educated in improvement of working conditions.

### **Good practices**

Several good practices have been provided by the participating countries, such as:

- Trends can be deduced from data in the registers and statistically analysed (Finland);
- Calculation of a personal risk based on reported figures (Belarus);
- Awarding good practices can initiate new projects (several countries);
- Projects focussed on the ageing population (Poland);
- Post-exposure medical examinations (e.g. in Lithuania).

### **International networks**

Finally, from the vast amount of data in this and other projects the experience arises that international collaboration is paramount in getting more insight in the pattern of OD, WRD and ER and trends therein. Modernet and the BSN network are good examples of international networks that stimulate research and development in this field.

## 9 Annexes (in Volume 2)

Annex 1	Overview of national OD lists
Annex 2	Meeting minutes
Annex 3	Presentation of the country questionnaire
Annex 4	Country Questionnaire for Belarus
Annex 5	Country Questionnaire for Estonia
Annex 6	Country Questionnaire for Finland
Annex 7	Country Questionnaire for Germany
Annex 8	Country Questionnaire for Latvia
Annex 9	Country Questionnaire for Lithuania
Annex 10	Country Questionnaire for Norway
Annex 11	Country Questionnaire for Poland
Annex 12	Country Questionnaire for Russia
Annex 13	Country Questionnaire for Sweden
Annex 14	References

*The contents of this publication are the sole responsibility of ECORYS Consortium and can in no way be taken to reflect the views of the European Union.*