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OCCUPATIONAL SAFETY RESEARCH IN NORWAY

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ABSTRACT

The workforce in Norway (2.7 million) is employed in agriculture, forestry and fishing (3 %), mining, oil and electricity (3 %), construction (8 %), manufacturing (9 %), transport (6 %), education (8 %), health and social service (20 %), and other services (43 %).

There are five different authorities in Norway having responsibilities over different branches or groups of occupational accidents and injuries. Their overviews of the annual numbers of occupational accidents and injuries, also the fatal ones, are more or less complete, mostly less.

An overview is given of the development of the research on occupational safety made in Norway since the late 1970-ies. The oil industry's need for improving the safety in the North Sea was an important driving force for this development. For the time being, research on occupational accidents is carried out in four geographical areas in Norway: Trondheim, Os i Østerdal, Stavanger and Oslo. Their activities are listed.

The present situation is fragmented. There is no coordination between the various research groups; there is no national research program. There is very little research on the «normal» accidents in small and medium sized enterprises. The statistical overview of both fatal and non-fatal injuries is misleading. To improve the situation on research in occupational safety, this research should be co-ordinated by means of a national program and a national competence center.

INTRODUCTION

Norway is a country with about 5 million inhabitants; neighboring countries with common borders are Sweden, Finland and Russia in the far north. This year, she celebrates her 200 year anniversary of the Constitution, signed 17th of May 1814 after being developed by elected Norwegians inspired by the American and French Constitutions.

After the Black Plague in ab. 1350, that killed about half the population, including the elite, Norway was ruled by Denmark for more than 400 years. But Denmark happened to be on the losing side in the Napoleonic wars and lost Norway to the Swedes, who were on the winning side. They had just chosen a former French general Bernadotte as their king. He went for Norway instead of Finland as the war booty. In the interregnum between the Danes and the Swedes, the Norwegians, helped by a Danish prince, succeeded to create a Constitution, which had a great impact on the development towards the peaceful independence of Norway from Sweden in 1905. This independence is still enjoyed, as a majority of the Norwegian people rejected going into the European Union in two referendums, one in 1972 and the other in 1994.

Traditionally, Norway has been a country of fishermen, hunters and peasants. Due to the mountainous nature, development of the many waterfalls to energy laid the base for early industrialization, but mainly to produce aluminum, fertilizers, and not so much manufacturing industry. In the 1960-ies, oil and gas was found in the North Sea. The oil industry is more or less nationalized, laying the base for a very solid national economy.

About 2.7 million persons are in the working force, 52 % men, 48% women. The unemployment is low, about 3.5 %. The workforce is employed in agriculture, forestry and fishing (3 %), mining, oil and electricity (3 %), construction (8 %), manufacturing (9 %), transport (6 %), education (8 %), health and social service (20 %), and other services (43 %) (Statistics Norway 2013).

WHAT ARE OCCUPATIONAL ACCIDENTS AND INJURIES?

Injuries are caused by **acute** exposure to physical agents, or absence of energy, that interacts with the body in amounts or rates that exceed the threshold of human tolerance (Baker et al 1984). They are divided into three main groups; injuries from 1) accidents, 2) violence and assault, and 3) self-inflicted.

An accident is understood as an unintentional event, or chain of events, characterized by the **sudden** release of an external force or impact which **can** manifest itself as a bodily injury (NOMESCO 1984, 1990, 1997). Hence, poisonings and back pains due to **long term** exposures are no accidents. In this paper, the focus is on occupational accidents. Violence and self-inflicted injuries will not be included.

STATISTICS OF OCCUPATIONAL ACCIDENTS

There are different authorities in Norway having responsibilities over different branches or groups of occupational accidents and injuries. They are divided into:

- The Norwegian Labour Inspection Authority (NILA), for injuries in land based occupations, agriculture and forestry, and also in the armed forces.
- Armed Forces Medical Service will also have the statistics of injuries in the armed forces.
- Norwegian Petroleum Safety Authority, for injuries in the oil production at sea and some oil factories on shore.
- Norwegian Maritime Authority for injuries in the merchant navy and in fisheries.
- Norwegian Civil Aviation Administration for injuries in the air service.

Each of these authorities has the overview of the annual numbers of occupational accidents and injuries within their responsibility areas, with high or low completeness. At the National Institute of Occupational Health there are efforts going on to create a complete picture of the occupational accidents and injuries registered by the various authorities. A report was made in 2007 (NIOH 2007). Here it was shown that the official statistics on land based injuries had a rather high level of incompleteness when compared with registration of medically treated occupational accidents in the former Injury Register at the National Institute of Public Health.

Also the occupational injury fatalities have a rather high level of underreporting. Wergeland et al (2009) showed that both the occupational injury death register at NILA, as well as Statistics Norway had an underreporting of 20 - 33 % of the land based occupational injury fatalities in the period 2000 – 2003.

DEVELOPMENT OF THE RESEARCH ON OCCUPATIONAL SAFETY (OS) IN NORWAY

This chapter is not supposed to give a complete and exact overview of all the research made in Norway on this issue during the last fifty years. It is based on what the author has collected of reports and articles from the area, and also personal contacts in the field of injury research from the late 1970-ies.

The first important contribution in this area was a clinical-epidemiological study on accidents in the working environment (Reigstad 1978), based on data collected at the accident and emergency unit in Oslo.

In the end of 1970-ies and beginning of 1980-ies, a Committee for Risk Research appointed by the Science and Technical Research of Norway (NTNF) had an impact on the development of risk research in Norway, including occupational safety and health. A member of that committee, Jan Hovden, was later appointed as the first full-time Professor of Safety Management at NTNU Trondheim, the Norwegian University of Science and Technology.

In the 1980-ies, Nordic cooperation in research on OS started based on growing contacts between young researchers in all fields of safety research, who met and still meet in the Nordic seminars (Nyblin et al 2010).

At NTNU and the research institute of SINTEF in Trondheim, the AURA-program emerged (Analysis of Occupational Accidents - Tinmansvik and Rosness 1989).

Quite a few research programs on safety in the oil business started in the 1980ies due to catastrophic losses in the North Sea, which created the focus on safety. Research groups in Trondheim (NTNU and SINTEF) and in Stavanger were involved (Rogalandsforskning – later IRIS: International Research Institute of Stavanger).

Based on the development in the North Sea, a so called Internal Control Reform emerged in the 1990ies. This reform put the responsibilities for safety on the industries, both in terms of research and prevention. This reform has been described and evaluated by Hovden (1998).

In the 1980-90 ies some research on occupational safety was made in the agricultural and forestry area (Reiling 1997, Lereim 1998), and in the fishing and shipping area (Lamvik and Torvatn 2005)

During all the years from the end of 1970-ies, there were quite a few hospital-based injury registration projects and systems running, with the aim of creating valid injury statistics. One of the aims of these projects was to be a supplement to the injury registration systems in the occupational and traffic area, which have rather high level of underreporting. The National Institute of Public Health in Oslo was the core of these projects. A summary is given in Lund (2004).

THE PRESENT SITUATION IN NORWAY



There are four geographical areas in Norway where research on occupational accidents is carried out for the time being: Trondheim, Os i Østerdal, Stavanger and Oslo.

The present situation in Trondheim

In Trondheim the following groups are working on occupational safety:

NTNU (Norwegian University of Science and Technology) at IØT (Department of Industrial Economics and Technology Management

Research based master and post education on the prevention of occupational accidents:

- Safety management (SM) and leadership

- Methods and tools in SM
- Safety and organisation
- Accident investigation
- Resilience engineering
- PhD studies on: Safety culture, Safety Management in the Construction Industry

NTNU – Studio Apertura (Social research)

Research made on safety in operation: offshore, maritime, aquaculture, transport, health, construction.

SINTEF – Technology and society, Department of Safety Research

Here research is made on:

- Accident investigation
- Human factors
- Risk based safety management
- Indicators for monitoring risks.

St Olav hospital and Centre for Rural Research (Bygdeforskning) collaborate on a major project on prevention of accidents in agriculture, together with IRIS in Stavanger

Common for NTNU and SINTEF is that the oil and gas industry dominates the research activities. There are, however, also research on occupational safety in fish farming, shipping and the construction industry. Knowledge, methods and tools for occupational safety developed in one area can be transferred and adjusted to other industries.

Os i Østerdal

is a municipality with about 2.000 inhabitants. Agriculture is a major industry. A municipality doctor with a simple injury registration system monitors the injury situation in the municipality. Analyses of injury stories enhance prevention of agricultural accidents in collaboration with local agricultural organisations. This is a good model on how to establish simple registration and prevention systems in municipalities.

The present situation in Stavanger

In Stavanger, two main institutions are involved in research on occupational safety:

IRIS (International Research Institute of Stavanger):

Their research has with special focus on:

- Organizational factors
- Physical/psychosocial factors
- System perspectives.

They have running projects on:

- Young workers in building and construction, from school to working life
- Safety culture, occupational safety and health in agriculture
- Risk levels in the petroleum industry.

University of Stavanger

Their research has focus on:

- Organizational safety
- Accident research
- Risk management
- Risk regulation

The present situation in Oslo

In Oslo, the capital, there are quite a few academic and research institutions that might be involved in research on occupational safety. For the time being, the following institutions are making such research:

Stami (National institute of occupational health)

They have for some time worked on projects on electrical injuries (Veiersted et al 2003). There is also a department for the monitoring of occupational health and safety, including occupational accidents and injuries.

TØI (Institute of Transport Economics)

This is an institute which makes research on traffic accidents and injuries. They research fatal traffic injuries happening during work. They are also involved in research connected to fatigue and traffic.

University of Oslo, Institute of Health and Society

At this institute there are collaborating projects together with the National Institute of Public Health and Oslo Labor Inspection Authority on:

- Evaluation of national registers of occupational fatal injuries
- Prevention of serious (disabling) injuries in young workers in construction industry.

THE PRESENT SITUATION IN NORWAY ON RESEARCH ON OCCUPATIONAL ACCIDENTS AND INJURIES, SUMMARY

The situation in Norway with regards to research on occupational safety is fragmented. There is no coordination between the various research groups; there is no national research program.

The research activities are mainly driven by money from the industry, especially the oil business. There is very little research on the «normal» accidents in small and medium sized enterprises.

The statistical overview of both fatal and non-fatal injuries is misleading (NIOH 2007, Wergeland et al. 2009). Efforts are now made to improve this situation, mainly by use of health based accident and injury monitoring systems.

National strategy for prevention of accidental injuries 2009-14

A National strategy has been established and signed by 11 ministers (Norwegian Ministries 2009). The Minister of Labor is one of them. There are many activities proposed, among them:

- Strengthen the development of knowledge about accidents and injuries, based on the use of data from the National Patient Register, sectorial registers and in-depth studies.
- Consider strengthening the research into injuries and accidents within the work of the Research Council of Norway, for example by renewing relevant programs.
- Consider initiating research into the economic benefits of various accident and injury preventing measures, for use in setting political priorities.
- Clarify the responsibilities for the development and building of knowledge in the field of accidents and injuries as a whole by means of a mandatory structure for collaboration between the sectorial centers of competence.

Proposals for improvement of the situation in Norway

To improve the situation on research in occupational safety, this research should be co-ordinated by means of a national program and a national competence center with main tasks:

- Establish valid monitoring on occupational accidents and injuries on at least fatal and severe injuries.
- Some in-depth investigations should be carried out each year to identify the risk factors in order to develop prevention measures, on both fatal and non-fatal occupational accidents and injuries.
- Studies to be carried out on what works well and what does not work so well in the prevention of occupational injuries.
- Annual conferences on occupational safety with participants from all the «fragmented» parts of the occupational injury field.

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