

Development of OCCUPATIONAL HEALTH and the Situation in Austria

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August 2007

History:

Even during the time of advanced civilization (5000 – 1000 B.C.) people learned that handling special materials during work could endanger health.

During the development of civilization and settlement of towns and cities, specialization in all areas brought a growing demand for skills and craftsmen, and therefore endangering health through monotonous activities and unfavourable climate conditions and - possibility of accidents.

The Greek historian **Herodot (490 – 430 B.C.)** reported that the Egyptian **Pharao Cheops 2700 B.C.** was already aware of the possibility of accidents during the building of the pyramids and temples.

Therefore craftsmen were given special nourishment and medical treatment.

Even at that time the negative influence of the body and soul through monotonous skills and activities and physical labour was recognized.

Also the influence of climate and surroundings during work was known 5000 years ago.

But only since the Greeks 500 B.C. do we find more indication of health risks through human activities.

They began to think about a prophylaxis of illness through work.

Hippocrates (460 – 377 B.C.) had already written about special diseases of miners, workers in lead, gardeners, physical workers and seamen.

Also the negative effects of physical exercise was known at that time through

Aristotle

(384 – 322 B.C.).

The Roman poet **Titus Maccius Plautius (appr. 250 – 184 B.C.)** allowed his actors to portray the false attitudes of tailors and locksmiths in his comedies.

Other Roman authors describe special protection such as gloves, boots, masks, helmets and ventilation.

In the Middle Ages the Arab – Jewish doctor **Maimonides (1135 – 1204)** dealt with occupational health questions and hygiene.

He was dealing with questions of environment and danger through poisoning.

Shortly afterwards the French doctor **Arnaud de Villeneuve (1240 – 1311)** described the side effects of steam, humidity, dust and unfavourable work postures.

However during the Renaissance in the **16th century** people started to consider systematically different kinds of danger through special activities in certain professions.

It was only at that time that modest industrialisation began, for example in mining, and different craftsmen developed technical routines on a broad basis in towns.

At the same time medical doctors learned to look at and take reasons of illness more seriously, and they started watching the development more closely.

The Work Concept:

Physical work was regarded as inferior and that was why it was left to slaves.

During early Christianity the term “work” changed as long as work was useful and seemed to be service (for example the holy order of the Benedicts: **Benedikt von Nursia (480 – 543)** with the rule – “Ora et labora”).

In the early Middle Ages the exchange of work and rest was said to belong to the 6 healthy rules

(“6 res non naturales”).

Unfortunately this did not change the point of view that physical work was looked on to be inferior.

This is certainly one of the reasons why occupational health developed so late as a special field in medicine.

The expression “work” meant tribulation and need.

The situation was quite different when dealing with spiritual topics and fine arts.

The so called “artes liberales” were not seen as work and therefore only for citizens and knights.

Nevertheless to the end of the Middle Ages craftsmen like goldsmiths, tailors, carpenters, dyers, barbers and stonemasons developed a better reputation through growing specialization.

Physical work and mental work could no longer be divided.

However, physical work for wages was said to be inferior, and even **Wilhelm von Humboldt** [*Universität Berlin*] (1767 – 1835) strictly distinguished between physical and mental work.

In the 19th century the term “work” was defined in a new way as being “every human activity that deals with productivity”.

During the last decades one has tried to define the expression “work”, however, a suitable definition has not yet been found.

Early Works on Occupational Health:

One of the earliest works was written by **Ulrich von Ellenborg** (1440 – 1499), a doctor in Augsburg, who dealt with poisonous steam and fumes in goldsmiths’ work.

An article about the fertility of miners was published in 1523 by **Wenzeslaus Beyer**, a doctor in Leipzig.

The doctor **Paracelsus** (1493 – 1541), who moved from Switzerland to Villach at the age of 8, also wrote an article about so called „miners’ diseases”.

The scientist and medical doctor **Agricola** (1490 – 1555) was important in the foundation of occupational health.

Because of his book “*De re metallica*” – about the technique of mining and its improvement, the problems of professional danger were widely discussed.

In this book advice was given concerning illness, accidents, prophylaxis and hygiene.

The Iberian doctor **Amatus Lusitanus** (1511 – 1568) describes changes in lungs among miners and quarry workers.

Ysbrand van Diemenbroeck (1609 – 1674) a doctor from the Netherlands, also wrote about miners’ lungs.

Samuel Stockhusen (1607 – 1686) did a survey about diseases among miners.

In the 17th century people started analyzing working processes in order to construct machines.

This of course included the calculation of human physical activity such as turning round, carrying or moving weights.

These studies and those exploring human blood and the leverage of muscles and bones were carried out at the same time.

This was the foundation of **Occupational physiology**.

In the year 1655 in France in the course of growing navigation, an order was made that seamen had to be treated by medically proven surgeons.

In cities on the coast such as **Toulon and Brest** for example special *hospitals for the marines* were founded.

From 1689 on other workers were hospitalized and treated when they were injured or fell ill in workshops.

The cost was covered by His Majesty.

The English scientist **Stephen Hales (1677 – 1761)** wrote “A description of ventilators” - ... fresh air ... into mines, jails, hospitals, workhouses and ships...“.

18th Century:

The Italian doctor **Bernardino Ramazzini (1633 – 1714)** wrote the first typical textbook on occupational diseases and laid the foundation stone of modern occupational health.

Another important pioneer in occupational health was the English surgeon **Percivall Pott (1714 – 1788)**.

He is well known not only because of “Pott’s disease”, but also because of his studies concerning scrotum cancer in chimney sweeps through the influence of soot – summery 1775.

The Englishman **Thomas Percival (1740 – 1804)** demanded a reduction in working hours from 16 to 12 hours for the Manchester textile plants, and pushed through a better ventilation system in the work rooms (1802 “*Moral and Health – Act*“).

At the same time it was laid down that work must be done between 6 o’clock in the morning and 9 o’clock in the evening.

The works of Ramazzini woke up not only medical doctors but also mercantiles.

The French archbishop of Cambrai **Francois de la Mothe – Fenelon (1651 – 1715)** declared that “it should be the state’s goal to give its people a healthy and happy life”.

The main doctor of Würzburg **Philipp Joseph Horsch (1772 – 1820)** wrote in his book about the topography of the town and the relationship to health, and that the prophylaxis of public health is most important for the state.

Only healthy citizens are working citizens.

The Development of Safety Standards in the 19th Century:

Through the growing use of steam engines in plants and workrooms in the 19th century, more and more women and children could work in industrial works.

In 1819 in England a law was passed which forbid children under the age of 9 to go out to work.

At the same time night work was prohibited for young persons, and working hours on Sundays were reduced to 9 hours.

On the other hand maximum working hours for children between the ages of 9 to 13 were reduced very slowly to 48 hours a week, and for youngsters between the ages of 13 to 16, working hours were reduced to 69 hours a week.

In 1848 in England work in mines was prohibited for children under 10 and for women.

Inspectors were appointed in England to carry out observation.

In Middle Europe Germany was the first to engage in working conditions.

But it was only in 1839 when the employment of children under 9 was forbidden.

Working hours for young people were reduced to a maximum of 10 hours a day and night work was forbidden.

Bavaria followed with similar laws in 1840 and 1854.

A similar law was brought into force in 1904 in Germany concerning children's work. Following these regulations concerning minimal time for rest, Sundays as a day of rest came into force.

The first doctor who changed things for pregnant women and women after childbirth working in plants, was **Rudolf Leubuscher (1821 – 1861)**.

Pregnant women should be excluded from all heavy physical work from the middle of pregnancy, and he also recommended sufficient protection for nursing mothers.

The very slow development of safety at work in the 19th century, can only be explained by the fact that politicians and medical doctors, were surprised by the fast development of industrialism in all fields and in every state.

Up to that time social, medical and humanitarian questions were non – existent.

Besides problems of occupational health, questions of hygiene in apartments and epidemics in Europe arose (epidemic of European cholera in 1831/32).

On the other hand greed for profit, and the pressure of competition also slowed down the development of protective regulations and measurements.

In the first half of the 19th century for example, safety regulations in favour of workers developed more slowly in Germany than in England.

A clue to this is in the essay “The situation of the working class in England” by **Friedrich Engels (1820 – 1895)**, son of a textile manufacturer in Wuppertal, which made public the terrible state of affairs in Germany.

At the same time associations for the promotion of good health for the working classes were founded in Germany, for example the Julius Hospital in Würzburg, where doctor **Georg Adelman (1777- 1865)** wrote the book “About the diseases of artists and workmen” in 1803.

This book must be completely attributed as a guide to occupational health.

In 1848, the year of revolution, the German professor for literature **Stephan Born (1824 – 1898)** stated that “The state has to look after its helpless and handicapped working people”.

Rudolf Virchow (1821 – 1902), a German, science orientated doctor and pathologist, demanded at the same time legal regulations concerning working hours, diet, and general prohibition of work for children under 14 years of age, as well as shorter working hours in dangerous work places, protection of pregnant women, obligatory regulations for ventilation in workrooms, and protection against intoxication.

It was at this time when medical doctors finally started dealing with the toxic effects in human organism.

The upswing in chemistry made toxicology flourish as a new field in chemistry and medicine.

The Development of Occupational Health into an Independent Field of Medicine from the 19th Century onwards:

At an international conference in Lyon in 1929 the expression “Occupational Health” as an independent field of medicine was created.

In the middle of the 19th century there were already so called “Cassenärzte” , doctors in industrial plants (1877), who were especially in charge of workers.

The importance of occupational health should also be recognized through the employment of medical doctors taking care of the workers, for example **Dr. Carl Knaps 1866** , at **BASF in Ludwigshafen**.

Dr. Ludwig Hirt (1844 – 1907) summarized in “*Illness of Workers*“ occupational diseases and industrial accidents in a scientific way.

This new medical field was accompanied by newly developing occupational physiology and pathology, by toxicology and by prevention of accidents at work and work diseases.

Now preventive and curative medicine stood side by side.

Of special interest was poison and its effects; dust or aerosol in lungs, on skin and mucosa.

The founder of modern toxicology was the Spanish born Frenchman ***Mathieu Orfila (1787 – 1853)***.

Emulators in England were ***John Morgan (1798 – 1847)*** and ***Thomas Addison (1793 – 1860)*** with “*An essay on the operation of poisonous agents upon the living body*“ – 1829.

In Germany the physiologist ***Rudolf Adalbert von Koelliker (1817 – 1905)*** worked on the effects of various kinds of poison.

In the second half of the 19th century medical interest lay especially in sublimat, arsenic, chrome, lead or phosphorus, all of which can be absorbed through skin, intestines and lungs.

Special attention was paid to dyeing, metal working, tanning or the production of felt.

The Austrian doctor ***Friedrich Lorinser (1817 – 1895)*** recognized the *necrotic process of the jaw bones of girls* who were exposed to phosphorus fumes in the production of matches.

In 1846, at his instigation, girls and women were prohibited to work in the production of matches.

After 1883 controls of plants in Austria became stricter through the employment of work inspectors.

From 1905 another Austrian doctor, ***Ludwig Teleky (1872 – 1957)*** was well known as a specialist in occupational diseases.

In Germany the neurologist ***Ludwig Hirt*** worked in occupational health from 1868 onwards.

He wrote in one of his forewords “ ... that one must be aware of the fact that it is better to avoid diseases than to cure them, ... “.

The French Navy doctor ***Alexander Layet (1840 – 1915)*** and his book “*General and special profession – pathology and profession – hygiene*“ were of great importance.

There he dealt with acquired curvature of the spine, contractures of muscles, fractures, finger cramps, heart attacks, phthisis and varicosis and diseases of various professions.

Nearly all professions such as lawyers, pianists, washerwomen, lime workers, and zinc workers were mentioned.

So a lexicographically written book on occupational health was available for the first time.

20th Century:

The ancient and well known medical discipline became independent in education and further training, and became established in practical work as well as in research during the second half of the last century.

It is supported scientifically by knowledge in different fields such as Occupational Hygiene, Occ. Physiology, Toxicology, Pathology, Psychology, Ergonomy, Technology and Sociology.

This shows the high standard of quality in this scientific field.

We would, however, be wrong to close off other medical disciplines.

This complex diversity is almost impossible without interdisciplinary cooperation.

The Development of Occupational Health in Austria in the 20th Century:

During the early 1970's there were only a few, but more engaged, so called "works doctors".

The "**Arbeitnehmerschutzgesetz BGBl. Nr. 234**" (Health and Safety Regulations) was passed on **6th of July 1972**.

Section § 22 gives particular orders concerning occupational care at work.

This section ensures that every business regularly employing more than 750 people, has to establish a department of Occupational Health, depending on the exact number of employees and the degree of risks.

This was the first time Occupational Health was laid down by law in Austria.

The definition of the **Department of Occupational Health** was as follows:

„The occupational physician has to support and advise the employer in carrying out safety and health regulations in the company.

The occupational physician's activity should first of all cover prophylactic health measures, precautions concerning First Aid after accidents, sudden illness, and – outpatients treatment”.

Only doctors with "the necessary knowledge" could be engaged.

At that time, however, a clear definition concerning "the necessary knowledge" did not exist.

In **1982** the number of employees was reduced from 750 to 250 through an amendment.

Further more the amendment added that occupational health care could be covered either by an employed Occ. Health physician, or by a so called Occ. Health Care Centre.

Another new aspect was that companies with more than 1000 employees had to have a physician working more than 20 hours a week.

Occupational health physicians' work hours were firmly regulated concerning the number of employees.

Moreover a wider definition of the physician's tasks was recorded.

The tasks were basically prophylactic measures.

The correlation between work and health was of special importance.

The doctor was entitled to do the appropriate examinations.

He should develop occupational health care and promote the interest of the employees in questions of health care.

In spite of these new regulations only 28% of all Austrian employees were given occupational health consideration at that time!

Occupational Health Education:

One of the most important new regulations in the amendment of 1982 was, that medical doctors were obliged to have special education and training.

This theoretical and practical education has to be completed at the “Austrian Academy of Occupational Health”, founded in March 1984.

Health and Safety Regulations from 1st January 1995:

Up to 1999 the minimum working hours of an occupational physician were raised step by step.

Companies with up to 50 Employees:

must be looked after in terms of rounds of inspections by an occ. physician and a safety engineer:

places of work up to 10 employees, once every 2 years;

places of work with 11 – 50 employees, once a year.

Companies with more than 50 employees:

The minimum work hours of occupational health physicians during a year were raised from 37 to 84 hours in places of work, up to 150 people.

Working hours were further raised to 33 hours extra a year for every 50 more employees.

Time for action: 711 hours minimum in companies with more than 1001 employees, raised by 66 hours more a year for every extra 100 workers.

These regulations are for minimum hours, which have to be increased as soon as special occupational health examinations are prescribed,

and if night work is carried out regularly,

or if there is extreme physical strain.

The expression “Occupational Health Physician” was established.

Safety and Health Regulations from 1st January 2002:

Minimum working hours of occupational physicians are now called preventive hours. Working hours of safety engineers were adapted, plus the possibility of contacting other experts such as toxicologists, hygienists, ergonomists and so on, whenever necessary.

Committee for Maintenance of Industrial Health:

This is a twice yearly legal meeting of:

- Members of the factory committee
- Safety engineers
- Safety advisers
- Members of the company’s board
- Occupational physicians

In these meetings reports concerning changes, various occupational and other examinations, statistics about accidents at work or “near” accidents at work, and all other occupational health or safety activities are given.

Futhermore all future activities are presented.

Promotion of Good Health as Occupational Health Task:

During recent years the change in occupational physicians’ tasks was supported by changing social topics putting more emphasis on quality of life and environment.

Therefore the difference between prevention and promotion of good health is of importance.

The latter is no longer oriented towards prevention of negative phenomenon (e. g. accidents, illness, early ageing), but at the same time towards development and self – realization.

Therefore work life is an important area.

Actual Situation in Austria:

is shaped through the following:

- good safety and health regulations for many years with legal regulations

HOWEVER:

- acceptance of anthropological and sociological definitions of health and its use in companies is far away.

There is still too much medical education which defines “health” as “the absence of illness”.

Too often “promotion of good health” is understood as “prevention”, which is a term that describes the prevention of negative situations, instead of the promotion of the quality of life.

It has been proven that orientation towards the negative is an insufficient basis for promoting self-realization.

On the other hand we must clearly state that those fields simply do not exist in medical education, only rudimentarily.

There does not appear to be any necessity to develop occupational health in the way described above.

Where „classic problems“ such as occupational diseases no longer exist, occupational health comes down to a question of cost.

Therefore it all comes down to the question of cost: “Why do we need a doctor? Can you see any sick people here?”

Though not openly stated, the expectations of employers concerning occupational physicians have changed.

The “human tool” should be optimized.

The same can be said of the factory committee.

They want to be supported in order to push through their demands for work relief, so that they can improve their own personal social status.

But a new way in occupational health can be seen through the acceptance of international programmes such as “Age management”, “Responsible Care”, “Physical Activities at Work” and so on.

Concerning myself, I decided to concentrate on 3 special topics, apart from my usual daily work:

- Wide preventive activities (such as training for apprentices)
- Occupational field studies
- Specialisation on Ergophthalmology

Future Remarks:

Nobody would abolish the fire brigade because there hasn't been a blaze for a 100 years.

Concerning occupational health we must state:

Occupational health must not be reduced to daily medical work but we as occupational health physicians must be wide open to new sociological and social ideas and questions.