

Occupational health and safety in vocational training for productivity, employment growth and development SENATI's experience

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I. BACKGROUND

1.1 The origins of senati

SENATI was created in 1961, upon an initiative of the National Association of Industries with the purpose of overcoming the non-existent relationship between the technical education and vocational training, and the qualifications required by the productive scenario.

1.2 Participation of employers in vocational training

Employers are directly involved in defining guidelines of policies, objectives, strategies, contents, means and resources of SENATI. Vocational training relevance, profitability and quality is therefore positive. Planning and implementation are related to the production world.

1.3 Current teaching model

- Programmes are oriented to comply with the demands of the labour market.
- The educational objective is focused on the development of previously identified competencies of the productive scenario.
- Competency is defined as the ability to achieve a specific purpose as a result of an integrated activation of innate and acquired characteristics of a person (bio-psychic-social unit)
- Learning is mainly practical, in real working conditions and it is the main way to develop knowledge, skills and components of the identified competencies.

1.4 Impact of accidents on productivity

- The importance of occupational health is understood if we consider that half of the adult population works in some kind of industry, often under inadequate conditions.
- This is closely related to the productive capacity of the population and thus to the national economy.
- Active or working population of a country make up a very high percentage of the total population that varies between 30 and 50 percent. The group is important and substantial if we bear in mind that most of the population is part of the working crowd (industrial, agricultural, mining sectors, etc.) which directly generates the national production.
- Diseases and accidents at work have negative impacts on the country, industry, society and family:
 - Low productivity
 - High expenditure due to medical care and hospital admission
 - Compensations to the sick or injured worker
 - Economic and family problems

According to ILO data, every year there take place:

- 270 million accidents at work (205 per second).
- Absence for more than three days from work due to accidents.
- 160 million occupational non-fatal diseases.
- Accidents at work exceed deaths caused by:
 - Road accidents (999.000).
 - Wars (502.000)
- 2.3 million deaths related to work (5000 per day):
 - 350.000 fatal accidents.
 - 1.7 to 2 million fatal diseases.
 - Violence (563.000).
 - AIDS (312.000).

In our country, the awareness of preventing and recording accidents has been left behind. Very few or none are reported, the ability to control and supervise enterprises is beyond the available resources, thus valid information for prevention is lost.

In this context, SENATI's mission is that the learner/participant also acquires competencies oriented to the quality of service, environment care and **work under proper conditions of health and safety**.

In this sense, it was considered convenient to adopt International Management Standards.

In 1998, the implementation and certification process of the quality management system under the requirements of ISO 9001 standard was started.

In 2001, it was decided to implement and certify the environmental management system according to the requirements of ISO 14001 standard.

Finally, in 2004, the following **Institutional Policy** was approved:

“To keep SENATI at the forefront in the adoption and application of quality improvement, environmental performance and occupational health and safety systems.”

It was therefore decided to implement and certify the occupational and health management system according to OHSAS 18001 standard, Version 1999, since health and safety at work is an issue of concern for the institution.

Our Management system included Quality Management (ISO 9001:2001) and Environmental Management (ISO 14001:1996) that were implemented and certified in all our operational units; and working on an occupational health and safety system would supplement our system and it would be perfectly compatible with the already implemented standards.

II. EXPERIENCE ON OCCUPATIONAL HEALTH AND SAFETY AT SENATI

The work was developed with the support and commitment of the directing committee in the following way:

2.1 Implementation process of the occupational health and safety system

Step 1. Announcement of the decision: The National Director, through personalised letters, announces to the institution the decision of implementing an occupational health and safety system in 10 of our Operational Units. These would be: Talara, Pisco, Trujillo, Iquitos, Chiclayo, La Oroya, Huaraz, Tacna, Cusco and Surquillo.

- Step 2. Appointment of the person in charge of the Occupational Health and Safety System:** The National Directing Committee appointed a person to carry out the project. This was informed to all members of the institution through an official document.
- Step 3. Working team formation:** A working team was formed together with the person responsible for the system, as the team leader, in order to implement the system. Two industrial engineers of the institution were appointed and an occupational health expert and an occupational health and safety system expert were hired.
- Step 4. External initial training:** The hired experts trained the directing committee and the working team, respectively, and accompanied the full implementation process of the system.
- Step 5. Drawing up of the working plan:** With the support of the persons responsible for the quality system, the environmental system and the professionals of the technical management, a working plan was drawn up and after being approved by the directing committee it was made known to the 10 operational units involved in the implementation.
- Step 6. Preparation of instructional materials:** Instructional materials (a manual and a video) were prepared based on the acquired knowledge, the available information and the reality of our country and our institution. They provided the grounds to raise awareness of the occupational health and safety issue to all the staff of the institution.
- Step 7. Definition of Management Policy and drawing up procedures and work instructions:** After determining the documents to be used, the management policy was revised and defined. Procedures and operational instructions, that involved complying with all the standard's requirements and revising any document which did not include the occupational health and safety component, were elaborated. Subsequently, the policy was revised and approved.
- Step 8. Selection and training of occupational health and safety coordinators:** In each of the units involved with the implementation of the system, 2 coordinators were selected and they were trained in occupational health and safety and in the procedures and work instructions prepared and applicable to our activities.

- Step 9. Training of management committees and occupational health and safety coordinators of the 10 selected operational unit:** All SENATI's operational units have a management committee formed by a director or chief and 3 or more trainers. They meet regularly to assess the operational unit management and seek for continuous improvement. We therefore address them and we begin face-to-face training.
- Step 10. Testing:** All the staff members of the ten selected operational units were tested on the same date and time to measure the degree of understanding of occupational health and safety aspects and of the application of our documents.
- Step 11. Identification of threats and risk assessment:** Based on the defined and offered methodology, significant risks of activities were identified.
- Step 12. Identification of legal requirements associated to our activities:** With the help of a lawyer, we worked on the identification of legal requirements and prepared a specific procedure to be able to perform a continuous assessment of them.
- Step 13. Preparation of the occupational health and safety programme:** According to the significant risks, every operational unit prepared a working programme with the purpose of reducing or eliminating the degree of existing risk in the activities developed. The programme included activities, economic resources, responsible persons, times.
- Step 14. Implementation of the programme and monitoring:** After the National Director approved each programme, the planned activities were carried out and their progress was regularly verified.
- Step 15. Training internal auditors and implementation of audits:** All institution offices called for open competition of internal auditors' training. Internal auditors for each area office were selected and prepared. After training, these would be in charge of carrying out internal audits to the integrated management system.
- Step 16. Implementation of corrective actions and preventive measures:** As a result of internal audits, some deviations from some of the requirements were found in the system requirements (non-compliances) and once the main cause was determined, the corresponding

corrective actions were implemented. In this way, once such deviations were overcome, they were ready for the revision to be done by the directing committee.

Step 17. Revision of the system by the directing committee: Considering the information gathered from internal audits, monitoring and reports, the National Management Committee, together with the Director as president, assessed the degree of implementation of the system and it was decided to ask for an external audit of certification.

Step 18. Implementation of external audit of certification: A national competition was opened for the selection of a certifying enterprise and the winning enterprise (TUV Rheinland Group) carried out a certification audit in July 2006. This enterprise certified the occupational health and safety system of the 10 selected operational units.

2.2 Towards a new objective and a new challenge for the institution

Today, our objective is implementing this system in all operational units. Eight local headquarters and one operational unit will be ready to be certified this November.

The eight local headquarters and the operational unit to be certified are: Piura, Moyobamba, Cajamarca, Huancayo, Pucallpa, Chimbote, Arequipa, Lima and Ilo.

2.3 Results of the implementation

- The institution's staff and apprentices are more aware of occupational health and safety aspects.
- The level of risk of noise has been reduced by placing silencers and by turning extremely noisy rooms (that exceeded allowed levels) into soundproof rooms.
- Incorporation of health and safety issues into the curriculum.
- Workers at a safe and healthy labour climate.
- Application and communication of health and safety issues to enterprises.
- Development of skills to provide consultancy on occupational health and safety aspects.

- Workers are now more careful and, more often, they are using the necessary personal protective equipment.
- **The directors of the institution are highly interested in training a technical expert on occupational health and safety.**

As a coincidence and for the sake of our population, while implementing our system, in September 2005, the Ministry of Labour published the “Supreme Decree 009-2005-TR - Regulations of health and safety at work” which stipulates that all enterprises, no matter their field of business, must implement a health and safety system at work.

Due to this Supreme Decree, enterprises need to count on experts. However, the market has no available experts and thus, the need to train experts in the country becomes fundamental.

SENATI’s development management office detects this need and, working together with CINTERFOR, actions are taken to determine the real need and the level of training that a technical expert on occupational health and safety must have, and the required methodology to create a new technical course.

III. TEACHING AND LEARNING METHODOLOGY

3.1 Main processes for vocational training at SENATI

- 1. Identification of needs:** An analysis of demand and employment (jobs) identification is done with the help of the directors of enterprises.
- 2. Drawing up of occupational profiles:** Workshop of participative job analysis. Description of profiles in terms of TASKS and/or AREAS OF RESPONSIBILITY, with the help of experts of enterprises and based on the information of technological future of the job.
- 3. Identification of the competency profile:** The contents of tasks and/or areas of responsibility are analysed, and the areas of competencies are defined.
- 4. Curricular design and development:** The organisation of objectives and contents is done according to the occupational profile.

5. **Implementation of resources:** Main teaching material: job positions at the Vocational Training Centre. Application of a DUAL SYSTEM that enables practical learning at enterprises.
6. **Promotion and admission of participants:** Enrolment to academic levelling and assessment of participants.
7. **Teaching – Learning:** LEARNING METHODS BASED ON AN INVESTIGATIVE ACTION. Role of the teacher: facilitator of learning experiences.
8. **Assessment and certification:** Observation techniques of Performance (processes and results) with criteria and standards of the productive sector.
9. **Following up graduates:** Enrolment of graduates into the employment exchange to place them in the labour world when an entrepreneur requires a graduate from SENATI.

Following the steps of this process, the first thing that was done was setting the grounds for its development, that is:

3.1.1 Identification of needs

Firstly, the demand was identified; as well as problems of risk prevention; national, regional and international standards, etc.; and whether this demand was real.

To this purpose,

- A. Several interviews to large and small enterprises of several sectors were carried out and entrepreneurs were asked to share their views on the needs to train or incorporate an occupational health and safety technical expert at their enterprise:
 1. **Is there an area in your enterprise in charge of managing the occupational health and safety issue?**
 2. **Is the implementation of an occupational health and safety system one of the priorities of your enterprise? How are you planning to do it?**
 3. **Does your technical staff need to acquire knowledge on occupational health and safety? Why?**
 4. **Do you investigate accidents at work?**
 5. **Is it necessary to have a technical expert on Health and safety at Work?**

6. Do you think your organisation will benefit from an occupational health and safety programme?

The results were the following:

1. Health and safety at work is managed by committees of health and safety at work, the Human Resources area or an Industrial Health and safety Department.
2. The priority is to implement an occupational health and safety system according to the current legislation and some of the enterprises have already implemented their system. Others are in the process of implementing it with the help of a special consultancy and with guidelines provided by the Ministry of Labour.
3. The staff needs to broaden and update their knowledge on occupational health and safety in order to support the strategies of the enterprise. Training is required at all levels of the organisation, this includes heads of areas, members of the health and safety at work committee, occupational health and safety assistants, supervisors, operational staff of production. They also express that the staff needs to be aware so as to reduce the occurrence of accidents and incidents at their job positions.
4. Some enterprises investigate accidents at work and they even have procedures in place, including corrective action reports.
5. They express it is necessary to involve a technical expert on health and safety at work since he/she would have the necessary skills to take part in the implementation of the safety system at the enterprise.
6. They remark that the implementation of an occupational health and safety programme would no doubt bring in benefits to the enterprise.

- B.** We interviewed occupational health and safety experts of the Ministry Labour and of Health, experts on occupational health of hospitals, and an academician of the only university that offers training in industrial health and safety to the country

Each of the interviews were carried out with corresponding representatives of the institutions and, aware of the purpose of our interview, we arrived at the following conclusions:

B.1 National University of Engineering

Interview with Jorge Ruiz Boto, Secretary General of the National University of Engineering.

Considerations and comments:

- The demand by enterprises of Industrial Health and Safety Engineers has been increasing; this shows the need of many enterprises to meet current requirements in terms of occupational health and safety, such as the Supreme Decree Nr 009-2005 TR.
- Industrial health and safety professionals are exclusively in charge of implementing and monitoring, in coordination with all the areas of the enterprise, the compliance with occupational health and safety standards, established by the enterprise and the government.
- The issues of occupational health and safety should be approached separately and for the same amount of time. On average, each subject could be dealt with in 30 hours of class during a month.
- The issues to be approached in terms of safety would be the response to emergencies, preventive safety inspections, and the use of personal protection equipments, among others.
- With respect to the occupational health issues, the following topics could be covered: ergonomics at the job position and awareness of the staff.

B.2 ESSALUD

Interview with Mr. Gerardo Arias, Head of the Centre of Risk Prevention at Work (CEPRIT).

Considerations and comments:

- He informs that unlike what happens in Peru, in some other countries of Latin America such as Colombia, Argentina, Chile, among others, there are educational institutions that have implemented specialization degrees on health and safety at work, and possessing such degree is a requirement to be a safety supervisor at an enterprise, pursuant to their law.
- A technical degree oriented to the persons in charge, or workers of the enterprise that in some way will be responsible for implementing and/or maintaining a health and safety system at work would be

very necessary, since the offer of this type of courses are not covered by universities.

- Since the specialisation degrees offered by Universities try to cover the whole management system of the enterprise, they do not tackle the practical field of the occupational health and safety application. As a result, graduates often lack this kind of experience.
- The management of statistical information regarding the development of the occupational health and safety system at enterprises is still very limited, therefore institutions such as MINTRA or ESSALUD that should be managing such information are still unable to do a follow-up.
- Topics such as: internal inspections of health and safety at work, ergonomics at job positions, and awareness of the staff should be approached as part of the curriculum and are competencies that the staff should also have.

B.3 Ministry of Labour and Promotion of Employment

Interview with Eng. Alfredo Torres, Deputy Director of Occupational Health and Safety in the Ministry of Labour (MINTRA)

Conclusions and remarks:

- The implementation of the occupational health and safety system is still being developed by enterprises so the progress and MINTRA's demands towards them are still basic, and inspections also include information feedback to enterprises that contributes to the implementation of said system.
- On one hand, medium-sized and large enterprises may have the resources to face the situation and implement their occupational health and safety system; however, small enterprises may not have the resources available and a course offer proposal should also be done taking them into account.
- Enterprises frequently approach MINTRA looking for information on institutions that provide advice on the implementation of an occupational health and safety system; therefore, the offer of an occupational health and safety workers' specialization may have the demand of interested enterprises.
- A checklist has been obtained on items to be assessed when Occupa-

tional Health and Safety inspectors visit enterprises to carry out their inspection tasks. This list shall allow them to give an idea of what should be included in the specialization course or the technical degree course curriculum.

C. Technical assistance work for the definition of a specialization regarding occupational health and safety

In order to strengthen the executed work, technical assistance was requested from OIT/Cinterfor and the following was carried out:

C.1 Main Goal:

- Accurately define the need of having technical experts in the entrepreneurial context that provide guidance for the implementation and application of Occupational Health and Safety Management Systems considering regulatory demands.

After a fluent exchange between the consultancy firm and the professionals of Development Management of SENATI, a working plan was reached that considered preferably the study of expectations to elaborate a proposal adapted to our reality.

C.2 Mission development

Following the institutional presentation and the visit to some workshops of SENATI's Headquarters, the consultancy firm stated that from the presented aspects, the following were deemed remarkable for their importance considering the consultancy's purpose:

- The strong link to labour reality.
- The teaching method based on the "learning by doing" model with a strong component of dual training. During the workshops, it was possible to observe the practical learning by students and the premises available that are similar to those of enterprises.
- The wide coverage with centres in several points across the Peruvian territory.
- Different training levels covering: basic, middle or higher levels.
- SENATI's prestige in the market and the demand of its graduates.

C.2.1 National Industrial Association

Meeting with representatives of employers.

The purpose of this meeting was to identify how employers are man-

aging Occupational Health and Safety within their enterprises and to detect the competence that technical experts should have that may contribute to the implementation or maintenance of an Occupational Health and Safety System considering the Supreme Decree on Occupational Health and Safety.

To achieve this purpose, some questions were presented which, after being discussed, resulted in the following answers:

- 1. Which are the most pressing issues that you can identify regarding Health and Safety in your Enterprise?**
 - Widening the identification and analysis of health risks (noise, chemical pollutants, etc.).
 - Having more information available.
 - Staff training.
 - Improving spaces, infrastructure and working environments.
- 2. Is there a specific area within your enterprise where the issue of Occupational Health and Safety is managed? How is this area organically structured?**
 - The Occupational Health and Safety Committee.
 - The Head of safety.
 - The management level.
- 3. What would your enterprise require to implement the S.D. regarding Occupational Health and Safety?**
 - Staff commitment.
 - Higher awareness.
 - Increasing team work.
- 4. How would you describe an Occupational Health and Safety specialist that may work at your enterprise?**
 - Specialized professional.
 - Leader.
 - With a proactive attitude.
 - Empathising with the staff.
 - With the ability to train others.

At the end, a dialogue was started among the participants on the way they are implementing the Supreme Decree related to Occupational Health and Safety.

From the whole exchange, the following is concluded:

- Most of them are confused about the Occupational Health and Safety Committee's role thinking that it is in charge of managing Occupational Health and Safety, when in fact, it is a body for the participation of workers.
- In general terms, they require more information on the subject.
- When describing the specialist that may work in their enterprise, they clearly aim at a professional with firm knowledge and the capacity of multiplying the issue.
- They place the responsibility regarding Occupational Health and Safety on the Management or the maintenance area.

Following the Working Plan, Occupational Health and Safety specialists were interviewed.

C.2.2 Rebagliatti Hospital

Interview with Dr. Marcos Carlos Rodríguez, from the Occupational Health area of the Rebagliatti Hospital Network.

Conclusions and remarks:

- He described his tasks as a member of the Occupational Health internal service of Rebagliatti Hospital.
- He highlighted the lack of specialized human resources in the subject, both regarding industrial safety and hygiene and the labour medicine area.
- When referring to the regulations and particularly to the Supreme Decree 009-2005-TR on Occupational Health and Safety, he indicated the non-compliance with other previous regulations, for instance, the need of creating a List of Occupational Diseases as well as of protocols for medical exams to workers.
- He stated that he would have liked to develop more practical knowledge during his Master's Degree training at San Marcos University.

As to the question regarding the possibility of developing a degree course for Occupational Health and Safety Technical experts, he stated that the idea was extremely positive in order to increase the follow-up of risk situations that may be carried out in work centres and thus collaborate with labour doctors.

C.2.3 Labour Risk Prevention Centre - CEPFIT

Interview with Mr. Gerardo Arias from the prevention area of CEPFIT ESSALUD, Industrial Safety and Hygiene Engineer, graduated from the National Engineering University.

Conclusions and remarks:

- He referred to his training and the situation experienced when foreign experts were required to train specialists to work in such issue, since Peruvian universities have no offer on the subject.
- He fully agreed with the need of having technical experts helping start the implementation of the occupational health and safety system.
- He pointed out that although there are management experts, there is no one to assume the operational role.
- He stated that he was aware of the increase on specialists demand and assured that the training of technical experts would enable to anticipate the future demand in order to complement the engineer's or external consultant's tasks.

C.2.4 Andean Labour Institute - ILA

Interview with staff members of the Andean Labour Institute (Director and person in charge of occupational health and safety).

Conclusions

- The importance of decision 584 (Andean instrument of Occupational Health and Safety) and of Resolution 957 (regulation of the Andean instrument of Occupational Health and Safety) was pointed out in the interview.
- They emphasized the need of having a tripartite implementation of the Supreme Decree and a significant participation of the State.
- They also stated that the supply and demand of degree courses associated to Occupational Health and Safety are increasing and it was mentioned that the Occupational Health Division of the Environmental Health General Directorate would start developing a master's degree on Occupational Health in collaboration with Cuba, due to the lack of occupational health professionals in the country.
- The person in charge of occupational health and safety of the Andean Labour Institute stated that enterprises that wish to compete in

the market already have their prevention services available and that, from an international viewpoint, it is not acceptable that prevention services in Peruvian enterprises are not compulsory.

- They thought it was extremely positive that SENATI is training technical experts, Occupational Health and Safety operators, due to its great prestige, its national coverage and focus on practical learning.
- In order to collaborate with this possibility, some resources were appointed from other bodies that may assist or have their premises available through agreements or conventions with SENATI (Laboratory of the National Engineering University, equipments from the Ministry of Health).
- It was also seen as important for SENATI to take up the task of raising awareness in entrepreneurs, given its good relationship with that sector.

C.2.5 Trade Unions

Subsequently, the representatives of Trade Unions (CGTP – General Confederation of Peruvian Workers, CATP – Peruvian Worker’s Autonomous Union, CUTP – Peruvian Worker’s Central Union) joined the meeting:

Conclusions and remarks:

- As the representatives of workers, they shared their experiences regarding Occupational Health and Safety and they referred to the problems resulting from outsourcing, the particular situation of some sectors, such as stevedores, and workers’ unawareness of their rights.
- Trade Union representatives found it positive to train Occupational Health and Safety Technical experts that collaborate in the detection of risks and in workers’ health care.

C.2.6 Graduates of Occupational Health and Safety Master’s Degrees

Interview with Mr. Francisco Franco. Representative of CEPRIT. Industrial Safety and Health Engineer, graduated from the National Engineering University.

Conclusions and remarks:

- In his understanding, there are no more than 200 graduates from the only university in Peru that trains specialists in that subject.
- He stated that several Peruvian entrepreneurs are not aware of the real competitiveness requirements. Due to the coming demands, en-

trepreneurs will have to provide risk prevention services in order to export.

- When being asked about the possibility of having Occupational Health and Safety Technical experts, he answered that in fact they were trying to train teams in a practical way and at work, since they had observed the need of having people informed and collaborating with engineers.
- He pointed out that engineers would be able to devote more time to design, planning and research if technical experts were available.
- Technical experts, in his opinion, would act in the work field and in the continuous relationship with workers and would be extremely important to favour cultural change.

Interview with Mr. Alejandro Borda, Head of the occupational health unit of the Almenara Health Network.

Conclusions and remarks

- They work with a team of doctors, nurses and engineers, who identify, assess and control risks and perform workers' health surveillance within the hospital.
- He stated that they would like to have Occupational Health and Safety technical experts available. From the network, they would offer to aid the practical training of technical experts regarding health issues.
- Six years ago, when working as the Head of the Occupational Health Peruvian Society, they had the intention of creating an institute to train Occupational Health technical experts but they could not materialize the project due to several problems (lack of infrastructure, human resources, etc.).
- He underlined that the three training fields should cover the cognitive domain, attitudes and skills.

3.1.2 Final conclusions for the definition of needs

After carrying out a workshop with entrepreneurs, interviewing experts on the subject and exchanging opinions with social actors involved, the following conclusions are drawn:

1. Supreme Decree 009-2005-TR cannot be implemented if human resources' training is not increased.

2. In all the sectors consulted, there is consensus regarding the need of training human resources, and the role of a technical expert would be particularly valued as a different profile from that of a Master's degree graduate or a University postgraduate
3. SENATI's structure and approach would be the ideal context for the creation of the Occupational Health and Safety degree course, both in the consultancy firm's opinion and that of the consulted social actors.
4. There would be certain bodies with which agreements would be signed to share the infrastructure needed for the training of Occupational Health and Safety Technical experts.
5. Teachers' training should be revised in order to form a team that shares the preventive theoretical framework and the conditions and working environment.
6. In order to help raising awareness regarding occupational health and safety, SENATI should increase the importance given to this issue when training its graduates: increasing risk awareness in each occupation as well as prevention, and including the understanding of their labour rights.
7. The training offer of Engineers and doctors specialized in the subject should be increased.
8. In order to implement the Supreme Decree and to improve labour health, it is necessary to have a policy specifying the role of the State and agreeing with this undertaking of SENATI.
9. In line with the experts' training that SENATI may carry out, it is necessary to work on raising the awareness of workers and employers.
10. It is essential to have the collaboration and participation of trade unions and employers' organizations.
11. Training would be provided at the Technical Higher Education level by SENATI's Higher School of Technology.
12. By training technical experts in the area of occupational health and safety, there would be an increase in productivity and employment for the development of the country.

3.1.3 Recommendations

1. To continue with the process of implementing the vocational training programme for Occupational Health and Safety Technical Experts.
2. To visit an Occupational Health and Safety Training Centre in order to share experiences regarding training and insertion in the workplace.