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ABSTRACT

Reports on the development and recognition of environmental protection qualifications in the chemical and metal industries in Germany, France, Italy, Spain, and the United Kingdom were synthesized. The synthesis focused on companies' and social partners' current and planned strategies and obligations of companies regarding recognizing environmental protection qualifications. In all countries surveyed, the "environmental management" function was recognized by company management. Many large companies were establishing environmental departments or environmental services, and many small and medium-sized enterprises were integrating the task of environmental protection into the functions of the company owner/manager. Most companies tended to give further training in environmental protection to their own staff rather than to recruit individuals with specialized diplomas in environmental protection. Companies recognized the competencies acquired by their environmental staff through training or other means; however, the environmental protection functions undertaken at the first level of qualification received little recognition. The following methods of developing environment-related occupational profiles were identified: bodies responsible for initial or continuing training were analyzing and establishing training objectives in the environmental field; environmental legislation was beginning to incorporate descriptions of firms' mandatory environmental protection functions; and future negotiations regarding renewal of collective agreements are slated to include recognition of environmental protection competencies. (MN)

panorama

Valorization/recognition of environmental protection qualifications in the chemical and metal industries

Synthesis of the national reports

- Federal Republic of Germany
- France
- Italy
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CEDEFOP

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CEDEFOP INTRODUCTION

The monitoring and analysis of qualifications in the Members States plays a key role in responding to the request expressed by the social partners, governments and the Commission to improve understanding of:

a) the contents and levels of qualifications in the EU Member States;

b) trends relating to competence needs and the way in which the different training, education and production systems react to these.

In 1991/1992 CEDEFOP carried out comparative studies in 5 countries (D, F, E, I and UK) in the field of environmental protection in the metal and chemical industries. The findings of these reports should elucidate the qualifications needs and offer on national and transnational labour markets.

They should also form a basis for planning and renewing initial and continuing vocational training programmes.

On the other hand, this area lends itself to developing new profiles, to social and vocational integration programmes for young people and to transnational cooperation, including the exchange of young people undergoing training.

At the request of the European Commission and the representatives of the social partners in several Member States we have carried out studies on the validaton of qualifications in order to promote setting up transnational measures as envisaged by the "LEONARDO" programme, in particular: transnational pilot projects, improving the quality of training systems, exchange programmes and transnational placements, transnational projects to support innovation, transnational in-company placement projetc etc.

Germany, France, Spain, Italy and the United Kingdom participated in the surveys. These countries have fairly differing national economies yet the problems faced in the field of environmental protection in the metal and chemical industries are astonishingly similar.

This has allowed us to demonstrate similar interlinking factors between the intervention mechanisms of public bodies and the social partners and the implications for the validation or recognition of trades in the sector and for their value on the market.

For this reason we have published the five reports and the summary report in one single volume (FR) and the summary report in EN. The national reports in the original languages (DE, ES, I and UK) are available free of charge upon request from CEDEFOP.

Enrique Retuerto de la Torre
Deputy Director

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Project coordinator

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INTRODUCTION

CEDEFOP's studies on occupational profiles related to the environment have shown that new professional activities are emerging in the chemical and metal industries as a response to the challenge of environmental protection.

How are the qualifications required for these newly emerging activities recognized and valorized? Five national reports examined this question in Germany, Spain, France, Italy and the United Kingdom and addressed five aspects:

- the role of continuing training,
- the incorporation of these qualifications in the collective agreements,
- the importance assigned by the companies to these competences in their work organization,
- the recognition of these qualifications by the State,
- ongoing or envisaged measures to valorize these qualifications.

The Member States have reached different stages in the question of recognition, but some common lines of action are emerging and these are the foundations for our synthesis report:

1. Company strategies are based more on the modernization of existing occupations than on the recognition of new qualifications.
2. The role of training is a determinant factor in the valorization and recognition of achievements.
3. The social partners have the desire to promote the valorization of these qualifications.
4. Some measures are being envisaged in the coming years to achieve a better recognition of these qualifications.

First of all the specific situation of each country must be taken into account.

In Germany the valorization of qualifications is assured mainly by regulations and the national report mentions the different regulatory categories in the fields of vocational training, company production, higher learning and the agreements between the social partners. At the end this report lists the numerous texts from the laws and decrees on which it is based.

In Spain the companies' awareness of environmental issues is more recent but authentic, especially in the large firms. However, even though the environment is a leading issue today, the economic crisis has put a halt to reflection and to action. The companies no longer feel that this is an investment which will pay in the long term. The interviews with the representatives of public and private enterprises, trade unions, teaching establishments, employers' associations, the Ministry of Education and Science and the State Secretary in charge of water and environmental management policies, enabled a detailed analysis of ongoing developments in the fields mentioned above.

In France the environment is starting to become an integral part of the strategy of large firms in the chemical and metal sectors. This is far from being the case in the small and medium enterprises which, because of the economic crisis, are tempted to seek short-term answers in the field of investment and training. However, attention is also being paid to the development of relevant technologies because this enables savings in the long term and opens segments of the market for new products. On the basis of the interviews held with managers and workers in the enterprises and trade union representatives, the report describes

the different types of recognition for and valorization of environmental protection competences, whereby the non-institutionalized forms of recognition are the most important.

In Italy the existence of traditional and new occupational categories linked to environmental protection, can be observed in firms in the chemical and metal sectors. Based on interviews with representatives of the social partners and on various documents, the report shows the developments in the training system, the companies, legislative bodies and the trade unions in two different directions: re-valorization of continuing training and recognition at the legal and contractual levels.

In the United Kingdom, consultations with public sector agencies with employment/vocational training, trade associations/industry bodies, trade unions and employer representative bodies, enabled an analysis of the recognition of environmental protection competences. The specific aim of this report is to study the implications arising from the absence of formal qualifications relating to environmental protection competencies.

PART ONE

STRATEGIES AND OBLIGATIONS OF COMPANIES IN THE RECOGNITION OF ENVIRONMENTAL PROTECTION QUALIFICATIONS

1. Legislative framework and development of environmental protection strategies in the companies

In all the Member States covered by this study, legislation on environmental protection in the chemical and metal industries developed under the dual pressure of European regulations and the committment of local bodies and agents: professional organizations, elected representatives, etc.

These two industries belong to the most polluting industrial sectors: they produce toxic effluents and nitrogenous discharges, mostly in water, and commonplace and toxic waste. They are also the sources of numerous polluting incidents or accidents.

In Germany legislation has some provisions which directly regulate the qualifications and some attributes of environmental occupations.

In the other States, the provisions on qualifications tend to stem from the impact of corporate strategies and agreements between the social partners or between the members of a trade organization.

In Spain the Federation of Chemical Industries of Spain (FIQUE) has set up a very ambitious programme entitled "Commitment to Progress" which stresses environmental issues and is based on Community regulations to control pollution. It will induce the heads of the large chemical companies to commit themselves to protection of the environment, health and industrial safety. These commitments will be monitored through a "good practices index" and the enterprises which do not respect these commitments will be expelled from FIQUE.
Furthermore, it is planned to draw up a framework agreement between this Federation and the Directorate-General of the Environment. It will deal with the adequate disposal or processing of industrial waste.

In France the progressive enforcement of the implementation decrees of the law on waste of 2 July 1992 means that the companies have to optimize their waste streams by focusing on recovery and maximum re-cycling of commonplace waste (packaging, etc.). Many of the SMEs are undertaking a study of their waste streams and making a diagnostic assessment.

The public image of the chemical industry has often been adversely affected by pollution and accidents. But this industry, which is the source of much of the polluting waste generated, is making a substantial investment in anti-contamination installations. Also, the large firms wish to develop a public image associated with environmental protection.

On the other hand, environmental protection is also an integral part of the business strategy of these companies, as an effective policy of prevention, resource recovery and development of relevant technologies will enable them to make savings in the long term.

Furthermore, several companies in different sectors, many of which are from the chemical and metal industries, have founded the association called "Enterprises for the environment" and they adhere to the Charter of companies for sustained growth proclaimed by the international Chamber of Commerce.
The working group on "Training" in this association will help to disseminate knowledge of environmental protection in all training programmes. The French report analyses the strategy of industrial leaders to integrate environmental protection at all levels of the company.

In Italy the legislator is at present working on two texts: the implementation of Directive 89/391 of the European Community and a draft law on ecological audit.
The first text will enable the creation within the company of prevention and protection services to avert industrial hazards. This service will draw up a prevention programme and deal with information and training of the staff. A health monitoring service, a first aid service and a fire prevention service will also be set up.
The second text will make it mandatory for companies to present a report on the environment which will be submitted annually to the Chambers of Commerce. This report will be a management tool for the companies and will provide them with criteria for "environmentally compatible" options.
The draft law also has the aim of providing more resources for small enterprises so that they can improve their compatibility with the environment. For instance, it is planned to set up information centres run by trade organizations.

2. The impact of this legal framework on the recognition of environmental protection qualifications in the companies

This legislative and strategic framework means that each company has the obligation of making "environmentally compatible" investment and operational choices and of respecting the new regulations.

Thus; industrialists have to develop new functions for:

- ensuring waste minimization and waste treatment (liquids, solids, etc.) in the company, mainly by:
  - developing less polluting technologies and making their production more compatible with the environment;
  - ensuring the treatment of waste waters;
  - ensuring the treatment of waste.
- developing means of recovery, re-use and re-cycling of waste (regeneration and re-use of primary materials, including water, sorting of non-toxic waste for re-cycling, etc.);
- integrating environmental protection in their safety strategy: prevention of hazards, breakdowns and accidents; action against polluting effects in the case of accident.

Depending on the country and the size of the firms, these functions are ensured by one or more persons. They require the qualifications and competences developed in previous studies.

How are they recognized and valorized in the company today?

They can be recognized by law which obliges companies to employ staff with the necessary competences to fulfil these functions. This is the case in Germany where the competences are regulated by the law on the environment or labour law. However, as the German report underlines, these legal regulations deal more with highly qualified specialists and have little to say on workers and supervisors. We will list them later by type of function.

The legislation of other countries also demands certain qualifications but only in some specific fields.

The German report also states that these regulations do not always suffice to change the existing situations; thus, a survey revealed that 42% of the persons responsible for environmental issues did not meet the formal qualification requirements and had obtained their jobs only on the basis of "exceptional provisions". This is the reason for the importance of the following forms of recognition which are drawn up by the company and not imposed on it from outside.

Qualifications can also be recognized by the management of the company or through the role assigned to those who deal with the environment. The first alternative is more collective and the second one more individual, but both are linked to the size of the company.

In Spain, in the medium-sized enterprises, one person is often responsible for environmental matters but also has other functions. This person is generally the technical director, the production manager or the officer in charge of health and safety. On the other hand, the large companies, and especially the most progressive ones, are starting to set up teams for the environment which are part of the health and safety department or the technical services.

In France particular recognition is given to the functions of personnel management, expert advice and improvement of product quality through its "environmental compatibility". The economic aspect plays an important role in this recognition which entails the acceptance of the advice given by the environment manager. For instance, one of the objectives is to expand the markets of SMEs by acquiring orders from clients who are more sensitive to the "environmental impact assessment" aspect of the supplied products.

Finally, qualifications can also be recognized through the career development of the persons exercising these functions: training, promotion, level of education and experience required to be appointed to this post.

In Spain, only the large companies take account of environmental training when they allocate tasks or assign functions. They may recruit a person with a university degree, often an engineer or a chemist who has specialized in the environment by acquiring a Masters degree or a Ph.D and, if possible, also has some professional experience. In the other enterprises, a person who works in a field linked to the environment is often given the relevant training and then promoted to become the officer responsible for environmental protection while continuing to exercise his former functions.

In the United Kingdom, employers do not generally evaluate the environmental competences of the managers they recruit and are mainly interested in their general managerial skills. In the case of engineers and technicians, they are primarily interested in their general scientific and technical competences. However, as employers are starting to make their managers develop their environmental competences through other means, it is probable that they will give more importance to individual competences in this field.

In France the posts of environmental manager are career posts with high prospects of advancement. Company management generally appoints persons who have acquired several years of experience in environmental management and who have shown proof of their pedagogical abilities and advisory skills as project manager or head of the operational department.

We will try to enumerate and elucidate these different forms of recognition for the principal environmental protection functions. These forms of recognition by the firm are always linked to an interest, a strategy or an obligation which we will also try to describe.

The first function covers the responsibility for environmental management as a whole. The task here is to assist the head of the firm to chose the best options in environmental matters, to make them compatible with the operation of the enterprise and to comply with prevailing regulations.
This also involves the handling of external relations in environmental questions (administrations, etc.) and the preparation of an "environmental impact assessment" addressed to professional experts and conceived as information for the general public, i.e. show the compatibility of the options selected by the company with a sound environment, give figures on reduction and treatment of solid and liquid wastes, etc.

This global function of including the environment in corporate strategy could be a new stimulus for the development of the company.

As the Italian report explicitly states, companies should adapt to technological innovations and to international quality standards to secure their share of the markets. This is the perspective in which the two Community regulations on the eco-label and the eco-audit have been drawn up.
In the large Italian companies, organizational strategy envisages the creation of environmental directorates which have the task of ensuring an organic, global and efficient management of environmental problems for the company. Some groups use the eco-label and the eco-audit as instruments. The professional qualification of the persons exercising these tasks is that of an "environmental manager". In Italy traditional occupational categories in the enterprises are being enriched by the addition of knowledge and competences and an inter-disciplinary approach which takes account of the other functions in the company.
Obviously this target is more difficult for small enterprises as the environmental manager is often the owner of the enterprise himself, immersed in a multitude of tasks and without the necessary professional resources.
Mention should also be made of the Italian project for SMEs set up by the social partners. The aim is to establish, on an experimental basis, a common advisory structure for a given sector or a given area after completing a needs analysis.This structure could then propose the services of professional environmental experts to the enterprises.

In France this function of "environmental responsibility" is carried out at different levels depending on the size of the firm. In the larger companies this work is done by an environmental section headed by a manager. If a "safety and environment" section already exists, it is starting to put more emphasis on environmental activities.
The posts of environmental manager often provide real scope for action, but they are sometimes restricted by the financial costs of the measures proposed.
These posts have evolved from a purely "discharge control" concept to active environmental measures and the initiation of projects. Persons holding these posts are responsible for advice to the company management and for internal and external communication, and this role of advisor could have an effective impact on the strategy of the company.

In Spain, generalists who are primarily responsible for the environment, have the task of advising the entire company - starting with top management - on the measures required for a maximum reduction of pollution, on the specialists to be called in for specific projects, on

the environmental audits, etc. They should have a global view of the environment, the company and its production.
The large companies are starting to set up teams for the environment which can also be located in other sections and which are made up of a generalist, mentioned above, one or more specialized technicians, foremen and workers.

Thus, one may say that recognition of this global function as part of the work organization of an enterprise is emerging in all the States, and especially in the large companies, and is leading to the establishment of environmental directorates and environmental sections which are more or less well organized and equipped. This means that environmental management has been recognized as a corporate function which is as important as the other functions of an enterprise (purchase, maintenance, etc.)

This global function includes and "directs" other specific functions which correspond to the aggregate of environmental activities.
Depending on the size and the specificities of the company, the tasks of the environmental manager could include all the activities mentioned below or specialized technicians could be entrusted with specific tasks.
For each one of these function we will try to present the elements of recognition which were specifically mentioned in each report.

a) **propose and introduce improvements in production processes (making sure that the company complies with existing regulations) and conduct studies on the impact of new processes:**

In Germany, numerous and detailed regulations envisage the creation of a post for "officer responsible for protection against air pollution". His task is to participate in the development and dissemination of processes and products which are environmentally sound and to give his opinion on important environment-related decisions and on compliance with prevailing regulations.
The requirements for access to this post are also precisely defined: university degree in engineering, chemistry or physics, attendance of recognized training courses, two years of practical experience in industrial plants.
The trustworthiness of the candidate is also a condition for access. Persons who have violated environmental laws no longer have access to these posts.

The Italian report makes a specific mention of the controller of environmental audits who deals with the costs of environmental measures, phase by phase, in the production cycle: from the choice of raw materials to the technologies used, from the organization of work to the generation of waste.

In France this function is entrusted to the environment section in companies over a certain size, but this section always cooperates with other sections.

In the other countries there is no specific recognition of this function, but it is assumed either by the "methods" section or production engineers. **If this function is exercised, in collaboration with others, by an environmental manager, this means that importance is attached to his role (recognition through the distribution of tasks) and that this is considered to be one of the productive functions of the enterprise.**

b) ensure the proper functioning of existing anti-pollution processes and propose and introduce treatment processes for waste waters, waste and atmospheric emissions

In Germany, the water management law lays down the requirements for the "water supply and waste disposal technician" in the company. This law stipulates that companies which are authorized to discharge more than 750 cu. m. of waste waters every day are obliged to appoint one or more technicians for water protection. He should watch over compliance with existing regulations and draw up proposals to overcome deficiencies, get the appropriate technologies for waste water treatment adopted and participate in efforts to reduce the volume of effluents. He should have the technical knowledge required for the exercise of these activities and should be trustworthy.

At the same time, the law on waste disposal has similar provisions relating to the waste disposal technicians in the enterprise. These technicians have to be appointed if the enterprise has fixed waste treatment installations. Some manufacturers (electro-platers, operators of casting installations, manufacturers of solvents, etc.) are obliged to appoint waste disposal technicians. The tasks and competences are similar to those of the water supply/waste disposal technician.

In France, the accent is placed on waste management. Under the pressure exerted by the public authorities and the recent regulatory texts, the companies are starting to develop a policy of selective collection and sorting of commonplace industrial waste so that it may be re-cycled. On the other hand, it is necessary to optimize the toxic waste treatment streams, as the existing facilities are already saturated and control of internal illegal discharges, which were often undertaken up to now, has become stricter.

Posts of technicians for waste management have been created in some companies; they have the task of setting up and ensuring the proper functioning of the waste collection, sorting and treatment processes, and setting up and monitoring the disposal and recycling routes.

In Italy the environmental health engineer has the task of interpreting sectoral data and information in an interdisciplinary manner and transforming this into engineering projects for environmental protection.

In Spain, a decree makes it mandatory for some industrial enterprises employing more than 250 workers to appoint an environmental technician to control and rectify atmospheric pollution.

This function is directly linked to legislation on the polluting waste streams of the enterprise. Its recognition is based on the professionalism required to treat these effluents. It is a statutory obligation for the companies in several countries.

c) identify and evaluate the industrial risks in the enterprise, advise the head of the enterprise and set up a prevention programme by taking the appropriate measures:

This activity is entrusted to the section for prevention and protection against industrial hazards set up in Italy by the implementation law for European Directive 89/391. The decree which makes it mandatory to set up a section for prevention and protection against industrial hazards also stipulates that an officer should be appointed by the employer.

In Germany, the law on protection against polluting emissions also describes the occupational profile of the "technician for prevention of accidents and incidents". He has the task of improving the safety of the machines, providing information on breakdowns, monitoring and writing reports. Furthermore, if the company doctor requires this or the size or the organization of the company call for it, the employer has to appoint qualified workers as officers for industrial safety. They have to advise the workers on prevention of accidents and check the safety of machines and equipment.

In all the countries concerned environmental protection is closely linked to safety in the companies. So it quite logical that legislation in several countries addresses both issues together.

d) draw up and implement information and training programmes for workers on matters relating to safety and the environment

In Germany this task of providing information and training for the workers is inherent in all the different posts set up by the law: "officer responsible for protection against air pollution", "water supply/waste disposal technician", waste disposal technician", etc.

As for safety, this role is assumed by the safety officer, for example in the section for prevention and protection against industrial hazards in Italy.

In all the countries this task is mostly included in environmental management. The fact that it is not often explicitly stated, is an indication that this function is less known.

The activities carried out by the workers in the company are also partly linked to environmental protection and the prevention of industrial hazards. These activities include the following:

a) handle dangerous substances

In Germany, various legislative provisions on chemical products lay down the competences and theoretical knowledge required by the persons handling dangerous substances. This knowledge has to be verified and the employers also have further obligations of providing written instructions and information to the staff.

b) ensure the operation of treatment plants for effluents and waste

This operation is ensured by workers and technicians whose competences are not regulated or described.

The French report gives a detailed list of the activities to be undertaken: operate the plant, handle incidents occurring during the treatment process, check the conformity of the quality of the effluents treated, ensure the initial maintenance of the plant, ensure the management of the plant and incoming and outgoing flows.

The Spanish report also mentions:

- The supervisors directly entrusted with control of wastes or emissions and the collection of data required for the monthly reports.
  They have generally had second-level vocational training in a field related to the activities of the company and they have acquired the additional knowledge on the environment in the enterprise itself.
- The workers entrusted with the basic operations who have generally been trained in the company.

Contrary to the posts of managers and technicians who are responsible for environmental protection in the company, there is little recognition of workers and foremen who directly operate the treatment plants and waste control.

In the United Kingdom employers expect that environmental competences along with a range of other company-related skills will be developed "on the job" over a period of time.

In France the specific competences developed by the workers and supervisors are not recognized by their superiors or by their colleagues who consider this work to be a constraint. No specific proposal has been made for the development of these workers.

It is only in Germany that the existence of training for master craftsmen in industry which integrates environmental competences and validates them, leads to a recognition of these competences at an intermediate level of qualification.

Thus one may say there is no recognition by the company of the environmental competences of technical supervisors and workers in all the countries mentioned above except for Germany where there is a recognized training for master craftsmen in industry which includes environmental aspects.

3. Recognition and development of these jobs: in the European Community corporate strategies are based more on the modernization of existing occupations than on the recognition of new qualifications

In all the countries surveyed, the function of "environmental management" is recognized by the top management of the large companies. They have set up environmental directorates, environmental sections or environmental managers who have the clearly defined task of integrating environmental protection into corporate strategy. In the small and medium enterprises, this task is assumed either full-time or part-time by one person or by the head of the enterprise himself. Here too, this task is gaining more recognition as part of work organization.

However, the detailed analysis of the recognition of different activities and occupational categories related to the environment, described above, shows that this is based on the modernization of existing occupations. The practice of recruiting persons with specific environmental competences for these functions is still poorly developed in the surveyed countries. Generally, engineers and technicians employed in the company are entrusted with these new tasks without any specific recognition of the new qualifications they acquire through experience or through information or training.

Only German legislation has set out detailed specifications of the environment-related jobs to be created in the companies and the competences required for these posts. But the report states that this legislation is not always applied in practice.

However, the trends described in the different reports show that these posts and these functions are being developed.
The French report, for instance, states that all enterprises with more than 100 workers have to create one or more posts for environmental managers, posts which do not always exist at the moment. The framework law on waste contains provisions on studies to be carried out and the establishment of new processes for collection, sorting, treatment and recovery of commonplace industrial waste and special waste. This is a new activity for a good number of companies, which means they have to create at least half a post up to several posts depending on the size of the company.
On the other hand, efforts to equip purification plants at the industrial sites have to continue with the aid of financial support provided by semi-public organizations. It is planned to double investment within five years (11 billions of francs in 1992/96 as against 6.4 billions in 1987/91). New posts will be required to operate and manage these plants even if this mostly means a re-location of staff within the company.

The development of these functions, mentioned in all the countries surveyed, means that the company will have to give more recognition to specific environmental qualifications, above and beyond the necessary modernization of existing occupations.

PART TWO

RECOGNITION OF ENVIRONMENTAL QUALIFICATIONS ACQUIRED THROUGH TRAINING

1. Recognition of environmental qualifications through diplomas mainly concerns the qualifications acquired in initial training:

Recognition through diplomas, depending on the country, is part of the recognition by the State or the regions, or even the social partners. The training courses leading to diplomas are to be found in secondary education, in university education and in initial vocational training.

1.1. Vocational training addressed to youth or adults (in school or job-seekers):

1.1.1. Initial training for traditional qualifications

In Germany initial vocational training within the dual system includes a large share of environmental questions.
The German report gives details of the environmental elements included in the training regulations for the occupational categories "metalworking", "chemistry/physics/biology", "electronics" and a part of the category "economics and administration". The study shows that environmental protection is firmly anchored in the training regulations for metal and chemical occupations because these are the sectors directly involved with production processes and materials. In the electro-technical and the commercial occupations environmental protection plays a much smaller role.

Environmental protection is strongly integrated in initial training for the basic occupations of the metal industry. For example, the training regulation for the industrial mechanic includes a subject entitled "Work safety, environmental protection and rational use of energy" which covers the reduction of pollution at the workplace. This skilled worker must be capable of "making a distinction between auxiliary products, especially refrigerants and lubricants, in terms of their utilization, and handling dangerous substances in keeping with instructions".
In several occupations the handling of wastes originating from production is included in the occupational profile (machining wastes, for example).
In the chemical occupations, training content covers safety, accident prevention, environmental protection and the rational use of different sources of energy.
Many training objectives refer to the prevention of accidents and disasters, a subject which is particularly important in the chemical industry. For example, a trainee is asked to describe potential hazards and ways and means of avoiding or reducing them, and also how to handle different pieces of safety equipment. The training also includes reduction of air pollution and water pollution and the treatment of effluents.

Environment is one of eleven subjects in the theoretical examination on technology (metal trades) or on laboratory techniques (chemical trades).

This integration of the environment in initial training is being further developed, because the Central Committee of BIBB plans to make environmental protection one of the criteria for the future re-structuring of the occupations.

In Spain a vocational training module at Level 3 entitled "Environmental health" has just been introduced at national level and a growing number of schools are offering it.

In the United Kingdom, national vocational qualifications (NVQs) have recently been established on the basis of the competences required by the employers. These NVQs are developed by the lead industry bodies in the sector concerned including the social partners.

The NVQs developed for the chemical industry (chemical and pharmaceutical processing, laboratory operations, engineering maintenance for process industries) and the metal sector (casting, hot rolling, iron and steel production, steelmaking BOS stage, steelmaking EAF operations) have elements which cover environmental issues. They also have the aim of making the persons concerned aware of the Environmental Protection Act (EPA) of 1990 and the Control of Substances Hazardous to Health (COSHH) regulations. However, the British study states that these environmental training activities are geared by the requirement for companies to meet the provisions of legislation and not by a desire to give individuals high standards of competence.

1.1.2. Initial training for specific environmental qualifications

In order to train workers and technicians operating the waste water or waste treatment plants, France, Germany and Spain have established diplomas and specific training courses (European Level 2).
In Germany this is the occupation of "water supply and waste disposal technician" where training is given within the dual system in matters relating to water supply, waste water and waste (in the third year there is specialization in one of these three areas). In France the BEP for "Chemical industry and waste water treatment" and the CAP for "Water quality technician" provides training for these skilled workers in the field of waste water treatment including both urban and industrial sewage. A CAP course is being conceived for "Urban hygiene technician" which will provide training for skilled workers operating waste-sorting plants.
In Catalonia a Level 3 vocational training module entitled "Waste water treatment plant operative" has been created. In Spain training centres offer, among other courses, training for "Analysis of air, water, waste and pollution" which leads to the diploma of "Assistant environmental technician".

The Italian study, without going into detail, says that the secondary school produces occupational categories which hold intermediate positions by virtue of their level of knowledge and responsibility.

The subject of waste water treatment has been developed for several years, especially in the chemical industries, and there are diploma training courses which correspond to the requirements of existing posts, for instance, "plant operator". However, company owners or managers do not know much about these courses so that the existing posts are not filled with persons trained for this new occupation. The chemical and metal industries have had to reduce their staff in the last few years. So they prefer to train or re-train their employees to meet these new demands for environmental protection competences. Only the German study states that this qualification has found its place in a number of enterprises.

In the United Kingdom, on the other hand, there are no formal environmental protection qualifications at the moment. The employers do not feel that formal qualifications are needed because they believe that environmental protection competences are just one element of workers' general competences. On the other hand, in its analysis the UK report explains that the lead bodies have been unaware of the opportunity offered by the development of NVQs to formalize the development of environmental protection competences in the workforce.
A number of other lead bodies, principally WAMITAB (dealing with waste management) and COSQUEC (dealing with environmental conservation) have developed environmental NVQs in these two areas. They are particularly numerous in the case of transport and treatment of waste and tend to correspond to European Level 3.

In Italy young persons seeking employment may, within the framework of the vocational training provided by the regional authorities, attend training courses dealing with specific subjects such as: environmental hygiene and health, impact on the environment, legislation in this field, waste, noise, industrial safety, environmental technology, environmental management and planning. The provision of this training varies greatly depending on the regions.

1.2 Higher education

1.2.1. Initial training for traditional qualifications:

In the United Kingdom scientific and technical graduates are receiving more training in pollution control and waste minimization techniques often in conjunction with limited periods of industrial experience.

In Germany, some universities or technical colleges (Fachhochschulen) offer options or in-depth courses on environmental technology as part of the education leading to employment in the metal and chemical industries. This is the case for the mechanical engineering courses: in Duisburg for example, the common core subjects include in-depth studies of water chemistry and technology and environmental technology. In the case of the chemical industry, five universities offer a course on "environmental process technology" as part of the study programme for "process technology". The universities in the new Federal States of Germany include environmental issues in the training of graduate chemists. Students studying to become engineers or chemical technicians can select courses on environmental protection as compulsory or optional subjects.

1.2.2. Initial training for specific environmental qualifications

In Germany, in Spain, in France and in Italy a growing number of university courses and post-university programmes on environmental protection are being created. But the discussion which is explicitly described in the Spanish report between the advocates of a separate course for environmental protection and those in favour of incorporating environmental matters in various scientific and technical courses, is to be found in the other countries too. In all the States it is a fact that the companies do not recruit generalists without professional experience.

As a rule there are few university courses dealing solely with the environment. Spain and Germany are in the process of thinking about the relevance of such training. In Spain one single degree is devoted exclusively to the environment, that of "Higher studies in environmental sciences" in the Autonomous University of Barcelona. In Germany there are two university courses, one leading to "Degree Engineer in Environmental Protection Technology" in Berlin and one leading to "Degree Engineer in Environmental Protection" in Bingen.

In Italy the university introduced many new features after the reform entered into force and new degree courses were established. There are three certificates, oriented however more to the physical environment rather than industry.

Italy and France have a number of "short" training courses for environmental technicians which deal primarily with industrial safety and hygiene and are important for the chemical and metal industries. In Italy these are: "Chemical environmental engineering", "Advanced clinical

analysis techniques, analysis of the environment and analysis of industrial products", and "Industrial chemical technologies". In France these are the DUTs "Environmental hygiene and safety" and "Hygiene and safety" and the BTS "Water management".
Along the same lines, the Master courses in science and technology in France train technicians who are not far from engineers. There are several for water and the environment. Some have been transformed into engineering schools. For example, the engineering school for environmental engineering and construction at Chambery, trains engineers who will set up and operate treatment plants for air, water and waste.

There are numerous specialization courses on the environment in the second and third cycles of education.

In Spain, after discussion and reflection, the faculties and schools tend to offer specialization in environmental questions in the second cycle (environmental chemistry, environmental engineering,).

In Germany, there are almost 70 advanced courses in the universities, often with a European bias. For example, the course for advanced studies in environmental management in Europe in which thirteen European universities participate.

In italy there are three specialization degrees, one of which is "Industrial safety and protection" and seven advanced courses including "Chemical environmental engineering", "Advanced techniques of clinical analysis, environmental analysis and analyses of industrial products" and "Industrial chemical technologies".

In France, some schools which train engineers have already developed specialized courses or Master courses in Environment (Central school, School of Mining, National School of Chemistry in Montpellier, ENSA in Rennes, etc.).

There are many courses of study in the third cycle, Masters courses and Ph.Ds in this field. Indeed, as the Spanish report says, all the universities and schools want to have their own Masters courses in environmental protection but their quality is very disparate and some have little to do with the reality in the enterprises.

Some of these training courses are based on the demands of industry and are mainly linked to the legislative obligations of the companies.

In Spain the "Higher Programme for environmental engineering and management" organized by the School of Industrial Organization trains professionals for environmental protection. This degree gives access to the post which is mandatory in some industrial companies with more than 250 workers for the control and correction of atmospheric pollution. It is the only one taken into consideration by the company when it assigns environmental responsibilities.

In Germany the certificate awarded at the end of some training courses attests the possession of the technical knowledge required by environmental or labour legislation. This is the case for the training as technician for protection against air pollution or continuing training in safety techniques.

This type of training is also given in the form of continuing training addressed to job-seekers.

In Spain, for example, there is a diploma entitled "Expert for maintenance and operation of purification plants" which is intended for unemployed university graduates. This training which is both practical and theoretical will enable them to find a job in public or private purification plants.
In Germany, young university graduates who are unemployed can undergo a continuing training course to acquire a qualification as "Environmental consultant" or "Specialist for environmental protection".

1.3. The role of certified training in the recognition of environmental protection competences:

1.3.1. This role can be linked to the organization of training

This is the case in Germany for skilled occupations. The training regulation obliges companies and the professional chambers to follow the elements in the occupational profile and also the training objectives laid down. The inclusion of the environment in the training regulations is thus a good indicator of the formal recognition of the requirements in this field.
If the concept of environmental protection is to be fully integrated in initial training, the first requirement is that the different authors of the regulations, the institutions (Federal Government, Länder), representatives of the employers' and the trade unions, and experts should be fully aware of the problems and should be open to new ideas. This trend has become very visible since the 1980s.
These programmes also exercise an influence on the companies which train within the dual system. However, the regulatory obligations do not suffice to make the companies really capable of training candidates for the required qualifications. But the companies receive assistance from the BIBB or the Ministry of Education and Science. Through this, more funds are available for research on environmental protection training.

1.3.2. The inclusion of the environment in training programmes leading to "traditional" qualifications is essential

At present, the functions related to environmental protection in these industries are carried out by engineers, technicians and skilled workers whose initial training is linked to the productive aims of the company and not to a specific environmental protection certificate. This fact is, inter alia, responsible for the low level of recruitment in these industries. We had analysed this factor in Part One.
However, today, new posts for environmental tasks are emerging, especially in the larger companies.
For instance, the French report underlines that owners/managers of companies clearly express their desire to recruit specialists for these functions: engineers from the leading national schools, technicians in chemistry, chemical engineering, production of alloys, materials processing, etc. However, it is important for them that these persons have several years of professional experience.

In the United Kingdom, graduates in science and technology who join the companies have an increasingly higher level of competences in environmental matters, which also reflects a certain level of formal qualification. This will help to overcome the shortage of competences in the field of eco-audit and environmental monitoring techniques.

In Spain, the generalists who are responsible for environmental protection in a company, are people who have a technical university degree and specialization, but above all, they have a great deal of experience.

In other words, it is necessary to have specific environment-related training modules or training objectives so that the persons recruited by the companies for these environmental functions can acquire the necessary qualification, and this will, in the long term, improve recognition and development of these functions.

2. External continuing training outside the company for persons working in the chemical and metal industries:

Continuing training facilities in this field are used by companies to meet urgent and specific needs (e.g. linked to the legislative obligations of the company). Also, the workers whose tasks are related to the environment consider this to be the minimum assistance they need to satisfy the preliminary requirements of their posts. But this training lags behind the competences actually required for the job. It contributes towards a minimal "upgrading" of existing knowledge and skills rather than a genuine valorization and recognition of these competences.
Continuing training is also very varied depending on the size of the company. The large companies integrate it in their business strategy, whereas small and medium enterprises dedicate less effort to this task.
However, continuing training does play a more important role than initial training in industrial sectors with little overall new recruitment.

2.1. Training for managers, engineers and technicians

In the five countries concerned, industrial companies which have introduced environmental management policies, also train their managerial staff so that they may acquire the necessary competences. In order to do this, they use the private sector which has developed short training courses, seminars and colloquia addressed to managers and higher-level staff.
In the five countries, the quality and the costs of the training are very disparate, sometimes to a critical extent. The UK report states that the absence of an explicit definition of the required environmental competences leads to a lack of guidelines for these training programmes which cater to the "uncoordinated" demands of the industrial enterprises.

Because of this, there is a general lack of training for certain competences.
For instance, in the United Kingdom, there is a shortage of scientific and technical qualifications in the field of eco-audit and environmental monitoring. The companies have expressed a need for training to attain these skills to which private sector providers have responded, but the quality of this training is uncertain. The introduction of eco-audit regulations and standards should act to clarify the situation by assessing the results from the use of these competences. In addition, the Chemical Industries Association has proposed environmental training which is mainly focused on the needs of management and scientific staff.

Similarly, in France, continuing training at present is not complete and structured in fields other than industrial hazards. The training courses most in demand deal with environmental legislation and changes in French and European regulations. Colloquia or subject-specific 1-

day information meetings provide managerial personnel with information on several subjects: waste management, work with the media on the environment, etc.

In Italy, there are numerous consulting or training firms, organizations and agencies with awareness training or training for specific interventions. Some institutes offering specialized training exclusively in environmental protection have been set up by the professionals in the sector.

In Spain, the quality of numerous courses and seminars established recently, is also very disparate. However, continuing training is well structured because of the existence of organizations linked to the State which provide training for workers in the technical fields relating to the environment. The "Advanced Programme for Environmental Management" offered by the School of Industrial Organization under the Ministry of Industry, Commerce and Tourism, is also addressed to the workers. The Institute for Energy Studies, associated with the same Ministry, offers technicians and scientists a highly specialized training on energy, radio-protection and protection of the environment including pollution through chemical agents and the treatment of waste waters. The Directorate-General for Environmental Policy offers experienced workers specialization and qualification courses. The Spanish Confederation of Employers' Associations in the metal sector has created a permanent training centre for employers and managers in that sector. Short seminars and longer courses are designed for workers responsible for the environment. The shortcomings mentioned relate to the specialization of legal experts in the environmental field.

2.2. Training for production workers

In the five countries the continuing training which exists in the field of environmental protection is mainly addressed to managerial staff, engineers and technicians. The production workers are trained on the job by the company.
Internal sessions on various subjects are organized by the company itself. They are often directed by the engineers and technicians working in the company except for some subjects which are highly specialized.

In France the training course attended most frequently by supervisory staff is on environmental security (industrial hazards). But it is mainly the staff in the Environment Section or in the units with treatment plants which benefit from this training.
The operational staff have access to training courses on risks connected with the transfer and storage of dangerous materials. But the training offered at present does not cover the new monitoring and waste disposal techniques.

In the United Kingdom it is not the absence of formal qualifications which hinders training for production workers, but the fact that company owners and managers are not yet aware of the need to train workers at this level in environmental questions.

In Germany a special situation exists with regard to the continuing training of Master Craftsmen for industry. This training is available to workers in the recognized skilled occupations in the metal and chemical industries. The legislation governing the examination for Master Craftsmen for industry includes environmental protection: "The candidate should have sound knowledge of the laws, regulations and decrees relating to pollution control and the fixing of limit values. He must know what the impact of environmental protection measures on his company will be and should be able to meet the environmental protection needs of the

individual and society." Environmental protection is included more effectively in the regulation on the Master Craftsmen for industry in the chemical sector (from 1991) than in the metal sector which is older. The environmental protection measures cover industrial safety, treatment of waste waters, air and waste.

On the other hand: as part of the continuing training for technicians, skilled workers and technical assistants in the metal and chemical industries can acquire specialization in environmental questions. These include operation of environmental protection equipment and installations, technician for waste management, etc.

3. On-the-job and in-house training in the company

Acquisition of competences through work experience is a central factor for any company, but it has a particular relevance in the case of the environment.

On the one hand, as the French report states, the first criterion for an enterprise when appointing a person to a post linked to environmental protection, is his experience in the operations of this company. A thorough knowledge of the potential hazards and perils of production and their impact on the environment can only be acquired after several years of experience in all levels of production.

The UK report explicitly states that the employers are mainly interested in the general scientific and technical competences of new employees rather than their environmental competences.

The Spanish report says that managerial staff responsible for the environment need a global vision of the environment, the company and production. They have to have a thorough knowledge of legislation, costs and quality. At present there is no training course which corresponds to these requirements, these functions are undertaken by highly experienced persons who have worked in the different sections of the company.

In France, on the other hand, the operators who run the treatment plants or are responsible for waste disposal, acquire their competences through practice. Employers believe that the experience they have gained in the company is sufficient for this purpose. Even if it is not sufficient in practice, experience plays an important role in the acquisition of competences, often with the support of the managerial staff and technicians in the Environment Section.

The same situation was described in the Italian report.

In the UK too, the companies believe that techniques such as environmental monitoring should be acquired on the job.

In the French firms one of the tasks of the environmental manager is to develop the in-house training of production workers. At the moment this training focuses more on awareness and information rather than actual training.

4. Conclusion

In all the countries surveyed the central role of training in the recognition of environmental competences is stressed.

Recognition through certificates has been the subject of many experiments and innovations and also of numerous debates and reflections.
The multiplication of environment-related certificates no longer appears to be a panacea, and countries like the United Kingdom and Spain who have been thinking about a coordination of the different initiatives for the acquisition of competences are closer to the real situation in the enterprises.

On the other hand, the inclusion of environmental competences in traditional qualifications is essential for their recognition and for the firms. This integration of the environment in all training programmes is a good solution for university and higher education degrees but is still in its infancy in the case of certificates at the first-level of training.

Paradoxically, the valorization and re-valorization of competences through continuing training is still very limited in all the countries concerned. Everywhere, training provision is not well-structured, highly dispersed, and suffers from a lack of detailed analysis of the competences required by the enterprises.

For this reason in-house and in-service training still play a central role in the field of environmental protection.

PART THREE

RECOGNITION OF ENVIRONMENTAL PROTECTION QUALIFICATIONS BY THE SOCIAL PARTNERS

1. Action by trade unions and concertation of environmental action in the companies

As the Italian report specifically states, the activities of the trade unions in the field of environmental protection and their reflections on the relations between the environment and production go back for many years.
In Italy this dates back to the national collective agreements (Ccnl) and intra-company agreements on environmental protection and health. This is the basis on which the trade unions are working at present, firstly to improve concertation in questions relating to the environment and prevention, and secondly, to develop the regulations applicable to the different sections of the company.
Within the context of this concertation, the application of European Directive 89/391 defines workers' rights to training, information and consultation.

On the other hand, in many Member States, the workers' representatives play a role in matters relating to safety, health and environmental protection.

In Italy, the application of European Directive 89/391 recognizes the workers' representative who is responsible for control of the environment and safety.

In France, the Committees for Hygiene, Safety and Working Conditions (CHSCT) have moved from an individual approach in working conditions to a more global approach which encompasses protection of the environment. Since 1992 the law has given these committees - composed of representatives of the staff and management - greater responsibilities in the field of the environment. Sometimes, the members of the CHSCT come from environmental posts or are appointed to these posts because their work in these committees is appreciated. Safety/environment committees has been set up at the level of the companies and the sector concerned.

The sectoral agreement of May 1992 to improve working conditions, hygiene and safety in the chemical industry, strengthens the role of the CHSCT which the head of the company has to consult when preparing documents for the public authorities dealing with the environment. It mentions training for industrial safety but not training for environmental protection.

Some trade unions have initiated action which goes much further. For example, the Fédé Inie Chimie (CFDT) has developed the idea of setting up inter-company prevention services for SMEs; in Aquitaine an economic interest group has recruited a prevention/quality/environment engineer who supervises the work of sub-contractors.

Another line of activity undertaken by the trade unions relates to rules and regulations guaranteeing the rights of workers. If companies are to implement precautionary measures which will effectively prevent polluting accidents, it is important for workers to inform their superiors of all anomalies which may arise; this is not the case at present for fear of retribution.

In Spain, management and workers in the steel industry cooperate in the field of environmental protection. In the automobile sector, the large companies are introducing important measures to adapt to the entry into force of Community legislation in the areas of air, water, waste and noise. Thus, trade unions and employers' organizations are certainly aware of the importance of everything relating to the environment, even though this is not yet explicitly stated in the collective agreements.

In the United Kingdom all the social partners consulted recognized the importance of improving the environmental performance of British industry and of the need to develop environmental protection by increasing environmental awareness and taking steps to develop technical abilities/competences. This view has been reflected in the publication of position papers by both the CBI and the TUC. The trade unions argue that the development of formal environmental protection qualifications is important, to ensure that workers receive training, to raise the profile of training among employers (many of whom do not realize the need for training), and to see that additional competences developed in this field receive official recognition.

In Germany, a good number of agreements between the social partners include the rights of workers to get information on the environment, the right of opposition of the workers and the participation of workers's representatives in important decisions concerning the environment, i.e. participation in the work of environmental committees, participation in the appointment of environmental managers in the company.

About fifty chemical firms have negotiated intra-company agreements on improvement of information to workers' representatives on all matters relating to environmental protection and continuing training in this field. Environmental committees have been set up mainly to ensure the flow of information between the management and the Works Council. The annual reports submitted by the environmental manager to the company have to be discussed there.

In the metal sector, the trade union IG Metall has listed a number of demands on environmental issues which have not yet been accepted by the employers: e.g. the right of workers to get full information on potential hazards in the company, the creation of working groups with the task of elaborating ecological initiatives and projects, the environmental qualification of workers, etc. This union has also adopted guidelines for intra-company agreements which run along the same lines: the creation of an Environmental Committee with joint membership, presentation by the company of a report on the environment, qualification of trainers and staff representatives in matters relating to the environment, etc.

Despite all this, on the whole, there are few intra-company agreements containing environmental protection in this industrial sector.

2. Action by the social partners on training for environmental protection

As we have seen in Part Two, the activities of the social partners affect both initial training and continuing training through their role in establishing the certificates and the regulations for training including the environment.

But the role of the social partners at company level is to promote worker training, and we have seen that, as far as the environment is concerned, training is little developed and suffers from a lack of coherence.

In the United Kingdom, the social partners play a decisive role in the elaboration of NVQs, because it is the trade organizations such as the Chemical Industries Association and Steel Training which are responsible for the development of national qualifications in their sector. The aim of the Government is to enable 50% of the workers to acquire NVQs or units of NVQs by 1996.

However, the trade unions consulted during the study expressed the view that environmental training should become a part of the training of all employees without, however, necessarily leading to the development of formal qualifications. The unions have also underlined the need to give more intensive training to workers whose tasks are linked to environmental protection, e.g. recovery of waste.

The German report mentions several intra-company agreements in the chemical industry which go quite far in this respect. The agreement in the "Arzneimittelwerk Dresden" (1990) considers environmental training to be a priority and workers are released during working hours to attend this training: "Each worker must ... through his behaviour make an essential contribution to protection of the environment."

The agreement in "Bayer AG" encourages an extension and intensification of the technical knowledge of workers in the field of environmental protection. And the same applies to the agreements signed in "Hoechst AG" and "Flachglas AG".

The Society for Information to Workers' Representatives on Environmental Protection in the chemical industry organizes, in collaboration with the trade union "Chemicals, Paper, Ceramics", training courses all over Germany for the chairmen and members of the hygiene and safety committees. It is interesting to note that these courses at first dealt with basic knowledge of the environment, but are now focusing more on specific issues such as the recycling of waste.

In France, the action of the employers' organizations and trade unions is undertaken at the level of the consultative trade committees which propose, monitor and analyse the creation and the development of all technical certificates.
As far as the continuing training of workers is concerned, some trade unions have submitted proposals to integrate environmental protection in the objectives of the agreement in the chemical sector, but this agreement was not signed by all parties for lack of concrete indications.

3. The collective agreements

3.1. Environmental protection measures envisaged in the collective agreements

In some countries the collective agreements specifically mention protection of the environment.

In Spain one chapter of the VIIIth General Agreement of the Chemical Industries for 1992 and 1993 is dedicated to the environment; it underlines the necessity of ensuring defence and protection of the environment and defines the objectives of environmental policy.

3.2. Recognition of environmental qualifications and competences in the collective agreements

In some countries the time has not yet come for explicit consideration of environmental competences in the collective agreements.

In the collective agreements in the chemical and metal industries:

- In Spain there are no occupational categories linked directly to the environment.
- In the United Kingdom, the qualifications discussed in collective bargaining do not include protection of the environment.
- In France, collective agreements are based on general definitions of the levels of classification and not on specifically identified tasks. Thus professionality criteria are not included.

This situation is due to several factors.
The Spanish report explains that the role of environmental manager is in the process of being created and that there are not many professionals working solely in this field. This also applies to the other countries.
The absence, until recently, of certificates specifically related to this function has been a determinant factor. The collective agreements only mention the classical certificates, i.e. those most frequently found in the chemical and metal sectors.

Finally, the methodology used for the definition of jobs is also important.
In France, for instance, in the collective agreement for the chemical sector there are two levels of technicians and two levels of higher technicians which are defined very generally in terms of the level of the person, his experience and the level of responsibility. Because there are no real competence-linked criteria for classification, no mention is made of competences in the field of the environment.

In these three countries, environmental protection competences are considered to be just one element among others of workers' qualifications and do not have to be mentioned separately. The Spanish report states that, in the opinion of some of the interviewed persons, multiple skills are desirable and that each worker should have the concrete know-how required for taking adequate prevention or correction measures at his place of work.
This argument, however, is not valid for the environmental manager and it seems to be useful to define the functions and attributes of the higher-level managers who advise the rest of the staff.

The fact that the collective agreements do not include environmental protection qualifications does not mean that environmental performance is not reflected in pay schemes for the environmental managers of large international companies, as the British report shows by giving the example of Dow Chemical.

On the other hand, environmental qualifications are explicitly recognized in Germany and Italy.

In Italy, the chemical sector has drawn up a proposal for formal recognition in contracts of environmental qualifications within the framework of a general review of the classification of all occupational categories. The new system of occupational classification, which is being negotiated at the moment, is based on the definition of occupational categories for 11 functions in a "model enterprise", and could become the basis for discussion in the firms.
Out of the 11 functional areas proposed, those which relate to "environment and quality" contain the following occupational categories: manager for environmental protection and the safety of complex plants; technician for the safety of ecological installations; sample collector. We think it is interesting to specify the tasks of these occupational categories because we do not find similar examples in collective agreements in the other countries.

The manager for environmental protection and the safety of complex plants:
- *coordinates the actions of the workers and ensures that they comply with the legislation in force in the field of environment and safety,*
- *informs the different departments in the company of changes in legislation so that they may adapt their activities quickly,*
- *maintains contacts and cooperates with public and external organizations,*
- *manages emergency situations by organizing the necessary services.*
- *participates in meetings related to his sector and represents his company there.*

In this description we find the recognition of the global function of environmental management as set out in the different reports in Part One.

The technician for the safety of ecological installations:
- *makes workers in the operational units aware of the need to apply the legislation in force,*
- *periodically carries out an analysis of the safety of new installations with due consideration of ecological aspects and, in line with provisions in internal standards and in legislation, draws up proposals for improvement,*
- *participates in the elaboration of emergency plans and checks that they function effectively,*
- *ensures that knowledge of legislation is updated in the fields under his responsibility.*

The sample collector:
- *takes samples to be sent to the laboratory for specific analysis following the provisions set out for this task,*
- *carries out all the preliminary operations for analysis on the samples taken following the instructions of the technician.*

The description of the last job is interesting because it implies the recognition of specific environment-related competences for staff at the first level of qualification - something which is extremely rare in the companies, as we have seen in Part One.

In contrast, the agreement in the metal sector does not contain a similar recognition of occupational profiles linked to the environment. Only a few agreements within the large companies have defined profiles for "plant manager" and "safety officer".

In Germany, the situation is very specific. The different environmental qualifications are laid down in the legislative texts on environmental protection. Therefore, company agreements deal with workers' right to training and consensus of the workers in this field, as we have described above. It is interesting to note that the training envisaged in these agreements is meant for all the staff as a whole so that they are more aware of the need for environmental protection.
On the other hand, workers' right to training enables them to acquire a qualification in the field of environmental protection. For example, in a steel manufacturing firm a proposal to integrate environmental protection in vocational training was presented to the representatives of young workers and trainees and accepted by them.

4. The social partners, especially the trade unions, wish to promote the recognition of environmental protection qualifications

In all the countries surveyed we could conclude that the trade unions wanted:
- environmental jobs to develop along with environmental protection measures in a company,
- workers' acceptance of the environmental issues to be developed within the company,
- better recognition of the competences of persons who deal with these jobs,
- better training on environmental protection for all workers.

Without doubt the most effective progress has been achieved in the last point.

On the other hand, the inclusion of these objectives in intra-company agreements and collective agreements, is still extremely fragmented:

- A small number of intra-company agreements, mainly in the chemical sector, include them. It should be noted that trade union action has been oriented for a long time towards the improvement of working conditions and industrial safety and will now include environmental protection measures too. However, the workers as a whole are not always aware of the importance of this subject.

- Collective agreements in France, Spain and the United Kingdom do not contain recognition of environmental qualifications.
  In Italy, the negotiations on the renewal of the collective agreement in the chemical sector include the proposals on these qualifications.
  In Germany, recognition of these functions is incorporated in environmental protection legislation.

PART FOUR

FUTURE PERSPECTIVES FOR THE RECOGNITION OF ENVIRONMENTAL PROTECTION QUALIFICATIONS

1. Developments in initial training

There is no doubt that, in all the countries concerned, it is initial training which mostly reflects the future perspectives of environmental protection qualifications.
As the Spanish report states, just a short while ago there was neither training for nor awareness of the environment.

Two examples of ongoing measures mentioned in the reports are given in the following:

In France, the work being done in the Ministry of Education, in collaboration with the social partners, on the training paths for technical diplomas in the field of effluents and waste, including industrial treatment plants, will contribute to the valorization of the competences of skilled workers and technicians.

In Spain, a new diploma will be added to higher vocational education from 1994/95 onwards, that of "Higher Technician in Environmental Chemistry". This non-university education will give its participants the know-how required for the supervision and control of installations for prevention of pollution and environmental protection, the analysis of samples of effluents, and the choice of the appropriate measures. The persons interviewed considered this diploma to be a very important one because it will fill the gap in environmental protection training at the medium level. Even if the state of the economy at the moment does not favour the recruitment of persons with this diploma, demand for them will gradually increase.

This example of an ongoing measure illustrates the future of training courses adapted to company needs. It is a short course, similar to technician training in France and Italy, and has the aim of providing the competences required to carry out the technical environment-related activities described in Part One: ensure the proper functioning of treatment plants, etc.

However, as we stressed at the end of Part Two, it is integration of the environment in traditional qualifications which is the decisive factor today for the valorization of environmental competences.

In France, the industrialists support the inclusion of environmental engineering training modules in the existing diplomas and degrees for technicians and engineers. For instance, the economic and social council recently presented a report stating that *"the training of engineers and owners of enterprises will integrate in the programme a module on environmental questions and the impact on the environment of different technologies, so that these issues may become an integral part of management."*

In Germany, measures are being taken to develop the share of environmental protection in the training for the "traditional skilled occupations". The culminating point of this development: the recommendation of the BIBB to consider environmental protection in future as one of the criteria to be taken into account in the re-structuring of the training regulations.
For example, the training of assistant pharmacists will be prolonged by 6 months in order to cover the demands in the field of environmental protection.
There is no doubt that, in the German system, it is the training regulations which have the greatest impact. Indeed, a regulatory provision in this field could affect the qualification of thousands of workers.

In Spain, the Ministry of Education and Science has launched a scheme to introduce transversal subjects in all disciplines and at all levels of training which will include a basic training in environmental issues.

2. The perspectives of continuing training

Trends in continuing training are not moving towards formal qualifications.
Only in Germany are attempts being made to establish continuing training certificates in the field of environmental protection, but this training is far less regulated than initial training.
The United Kingdom report states that the absence of formal qualifications does not have an adverse effect either on the development of workers' competences in this field, or on the mobility of labour, or on the ability of employers to assess the environmental protection competences of their workers.

The measures being taken at present are attempting to structure continuing training provision.
Indeed, in all the countries concerned, we observe that continuing training provision for the workers, in full expansion, is suffering from too much dispersion and a lack of analysis of the global competences required by the firm.
The important thing here, as the United Kingdom report stresses, is not to inhibit the advantages of the flexibility of short and adaptable training courses.

In Spain, the reform of vocational training through LOGSE (Law on the General Regulation of the Education System) will make it possible in future to provide modular training courses for workers in employment.

In the United Kingdom, the Employment Department has recently established an "Environmental Standards Forum" which includes all the lead bodies and the British Standards Institute in order to coordinate and rationalize the future development of environmental protection qualifications. This Forum has two aims:
- to investigate the need for standards for environmental management across all economic sectors in the UK;
- to persuade the lead bodies to incorporate environmental standards into NVQs.

3. Trends in legislation

In some countries, the legislation on companies producing pollutant waste describes the occupational profiles which have to be available in the company.

This is the case in Germany where this type of regulation deals more with qualifications and access conditions rather than functions and occupational activities. Furthermore, in the context of environmental protection, these profiles are selective with an in-depth description of tasks; they are linked to initial training in specific environmental aspects.
The development of legislation in Italy also follows this trend. At present the legislator is working on two texts which will have an impact on occupational environmental activities:
- The implementation law for EC Directive 89/391 which will set up services for prevention of pollution and protection against industrial hazards,
- the draft law on ecological audits.

4. Initiatives taken by the social partners

The situation in this case differs greatly in the chemical sector and the metal sector. The ecological pressure is much greater in the chemical sector, as the German report explains.

Generally speaking, in all the countries surveyed, employers' associations and trade unions are aware of environmental problems but the collective agreements and intra-company agreements take no or little account of these aspects.
Re-negotiation, either at present or in future, of these collective agreements will provide an opportunity to develop the recognition of environmental protection competences, no doubt in the chemical sector at first.
For example, in France, certain trade unions wish to introduce new occupational competences which will be developed in the course of negotiations with the companies on changes in the classification of occupations.

5. Awareness factors and trends in the relevant bodies

The degree of environmental awareness in the different bodies concerned is a decisive factor for all levels of recognition.
Even in areas which are strictly regulated, as in the case of initial training in Germany, the differences in the degree to which environmental protection is incorporated into training will depend on the interests of the parties involved in vocational training policy.

Also, in all the countries concerned, it appears that "voluntary" acts of recognition will play an essential role in the future, once the legislative framework has been set up.

The principal actors influencing developments in this field are the firms.
Generally speaking, as underlined in the Spanish report, they are aware of the importance of environmental protection and are taking anticipatory measures while awaiting future legislation.

In Italy, one of the objectives of the draft law on ecological audits is to give the enterprises a tool for environmental management.

In Germany, there is an increase in the number of companies which are elaborating environmental protection guidelines; this will also have an impact on different jobs. Similarly, in the most forward-looking departments of the large companies, the trends in EC directives, e.g. the environmental audit, are being discussed more intensively, and this too will have an impact on occupational requirements.

The small and medium enterprises which have more difficulty in finding time to include environmental management functions and to train their staff for this purpose, are also in a process of dynamic change in two directions:
- the sharing by several companies of highly specialized environmental protection competences, for which the examples of Italy and France were quoted,
- the development of in-house training which can be supported by measures such as the "group training plans" in Spain.

On the other hand, in some countries, different associations belonging to the social partners are giving concrete shape to their voluntary commitment to achieve progress in this field.

In Germany, the Association of German Engineers (VDI) is tackling the aspects related to occupational profiles. It has co-signed a resolution calling for the integration of environmental protection in the training of engineers. At the same time it has made an appeal for continuing training facilities to improve the qualification of engineers in this field.

In France, the association "Enterprises for the environment" has launched voluntary measures to fight against "black spots" and to prevent a too-rigid administrative management.

The conclusion drawn in the Spanish report on environmental education applies to the whole of the European Community: "All groups of society should accept the necessity and the priority of exercising environmental control, of training and recruiting environmental technicians.... To this end, it is necessary for them to inculcate a number of positive attitudes to the environment, something to which education can make a great contribution."

CONCLUSION

In the chemical and metal sectors environmental protection is an obligation for all enterprises and entails a development strategy for some of them.
This implies the availability of competences to solve a number of concrete problems on the one hand, and a global vision and integral approach on the other.

Whether the impulse for the companies is the necessity of complying with legal regulations or producing a development model which is compatible with the environment, in all the countries surveyed the "environmental management" function is recognized by the company management:

- The large companies are setting up Environmental Departments or Environmental Services.
- The small and medium-sized enterprises are integrating this task in the functions of the company owner/manager or those of a close collaborator.

The various specific functions which emerged from the national reports, described in Part One, are also being increasingly integrated in the work organization of the companies, i.e. improve processes and procedures, ensure the sound functioning of waste disposal plants, train workers to acquire the necessary behaviour to ensure environmental protection, etc.

However, to date, in order to ensure the sound implementation of these functions, companies tend to give further training to their own staff rather than to recruit persons with specialized diplomas in environmental protection.
Nevertheless, they do recognize the competences acquired by the environmental management staff through training or other means. In contrast, the functions undertaken at the first level of qualification get little recognition.

This problem underlines the importance of better organizing continuing training provision addressed to workers and recognizing the competences acquired through this. This is an ongoing development in some countries.

Another essential factor is action by the social partners and especially the trade unions to develop training facilities for all workers as a whole.

But, will the internal changes within the companies suffice in the future to provide them with the competences they need?

It appears that they will have to make use of persons with certificates containing the inter-disciplinary environmental protection competences taught in initial training, and will have to do this at all levels. Also a good adaptation of initial vocational training to the needs of the enterprises will play a determinant role.

The identification and the recognition of environment-related occupational profiles is being developed in three ways:

- The bodies responsible for initial and continuing training are analysing and setting up training objectives in the environmental field geared to the needs of the enterprises. This is an evolution taking place in all the countries surveyed.

- In some countries environmental legislation is starting to incorporate the description of mandatory environmental protection functions in the firms. This is mainly the case in Germany.

- The future negotiations on the renewal of collective agreements will include recognition of environmental protection competences. This is already the case in the chemical sector agreement in Italy.

These three lines of action will help to establish precise and recognized functions linked to all aspects of the environment in the companies and will thus contribute to the development of these jobs and occupational profiles.

CEDEFOP – European Centre for the Development of Vocational Training

Valorization/recognition of environmental protection qualifications in the chemical and metal industries
Synthesis of the national reports
– Federal Republic of Germany
– France
– Italy
– Spain
– United Kingdom
Catherine Gay

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On the basis of study of occupational profiles in the protection of the environment in the chemical and metal-processing industries (D, I, UK), published in 1992 in the "document" series, CEDEFOP conducted surveys on the validation of qualifications, stressing the means of intervention of public bodies and the social partners and the consequences of such intervention for giving impetus to these trades on the national and European labour markets.

The five national reports (D, F, I, E and UK) and the synthesis report have been published in French in a single volume. The synthesis report has also been published in English.