



COMMISSION OF THE
EUROPEAN COMMUNITIES



NINTH REPORT OF THE
STEEL INDUSTRY SAFETY AND
HEALTH COMMISSION

(1977)



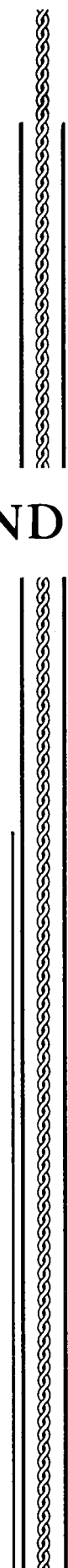


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Manuscript finished in June 1978



This publication is also available in

DA ISBN 92-825-0456-5
DE ISBN 92-825-0457-3
FR ISBN 92-825-0459-X
IT ISBN 92-825-0460-3
NL ISBN 92-825-0461-1

A bibliographical slip can be found at the end of this volume

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Printed in Belgium

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ISBN 92-825-0458-1 Catalogue number: CA-24-78-693-EN-C

C O N T E N T S

	<u>Page</u>
1. Introduction	5
2. Meetings of the Steel Industry Safety and Health Commission	7
3. Activities of working parties	10
4. The conference on Safety and ergonomics at Melreux	15
5. Studies	16
6. Accident Statistics	19
7. Conclusions of the working parties adopted by the Steel Industry Safety and Health Commission in 1977	21
8. Dissemination of information	22
9. Statistical tables	25
10. List of documents of the Steel Industry Safety and Health Commission	45
Appendix : List of the members of the Steel Industry Safety and Health Commission and its working groups	51

1. INTRODUCTION

After experiencing extremely serious administrative difficulties in 1976, the Steel Industry Safety and Health Commission was able to resume its activities in January 1977 and worked virtually normally throughout the year; there were 14 meetings of experts, work in hand on accident statistics and the causes of very serious accidents was continued, and there was very close collaboration with the two Belgian metallurgy unions (C.M.B. and C.C.M.B.) on the planning and organization of a conference for workers' representatives on safety committees in Belgian steel works.

This report gives details of these activities and summaries of the working parties' conclusions, adopted by the Steel Industry Safety and Health Commission at its meeting on 25 January 1977.

Readers are reminded that the Steel Industry Safety and Health Commission's conclusions take the form of recommendations and codes of good practice which it would be advisable, or even essential, to apply in steel works, but that they are never binding - unless, of course, the measures recommended already form part of national legislation.

The Steel Industry Safety and Health Commission considers that legislation cannot, and indeed should not, govern every single aspect of industrial activity, and that over and above legislation there is a great deal of room for exchanges of information both between companies and between the individuals concerned, whatever their job or grade and whatever the socio-professional group to which they belong or which they represent.

This deliberate choice by the Steel Industry Commission, to devise and popularize codes of safe working practice rather than draw up regulations, reflects the consensus of opinion of the steel industry workers' and employers' organizations represented on that body. It is also a reflection of the willingness of these organizations to meet, within the framework of the ECSC and the Steel Industry Safety and Health Commission, to discuss experience gained, in an attempt to find optimal solutions to those problems which they consider to be a suitable subject for joint studies.

As far as accidents are concerned, the Steel Industry Safety and Health Commission is pleased to note that the Statistical Office of the European Communities was able to provide the 1976 accident statistics as early as October 1977 - a sign of improved coordination between steel companies, collecting organizations and the Statistical Office.

This report includes a set of tables similar to those given in earlier reports, showing Community and national statistics, together with an overall analysis of Community statistics. Also given in this report is a summary of the study on the significance of accident statistics carried out by the Secretariat of the Steel Industry Safety and Health Commission, which encouraged the SISHC to launch a more thorough pilot study, starting in 1978, in conjunction with a number of Community works and companies.

The decline in steel production continued in 1977, and the serious problems of unemployment, short-time work, prices and restructuring became even more complex and acute, while the workers have been faced with part-time working, changes in work rates and transfers to other jobs.

This situation could affect industrial accidents and the very real and pressing difficulties being experienced could lead to a slackening of interest in accident prevention. The Steel Industry Safety and Health Commission is taking this opportunity to stress the continued importance, at all times and in all circumstances, of effective and dynamic action against industrial accidents and diseases, in the belief that whatever the social and economic situation, the physical safety of the worker is and should remain a major concern and an essential objective of all the parties concerned and all works personnel, whatever their job or grade. In saying this, the Steel Industry Commission is simply re-stating the philosophy which it has held since 1967 and which was reflected in the preparation and popularization of the ten principles of accident prevention.

2. MEETINGS OF THE STEEL INDUSTRY SAFETY AND HEALTH COMMISSION

2.1. The Steel Industry Safety and Health Commission held its 14th meeting in Luxembourg on 25 January 1977.

Meetings of the Steel Industry Safety and Health Commission (SISHC) are normally held once a year and that held on 25 January coincided with the resumption of its activities after a particularly difficult year in 1976.

The function of the SISHC is to decide on fundamental courses of action, and at this meeting it did the following :

- adopted the 7th and 8th annual reports (covering its activities in 1975 and 1976);
- obtained assurances from the Commission of the European Communities regarding the provision of the facilities required for it to function properly;
- heard a report on the subject of 'Industrial Accident Statistics and their Significance', a study carried out by the Secretariat of the SISHC, and decided to set up an ad hoc group to examine the results of the study and to report its conclusions to the SISHC;
- approved the conclusions of the Working Party on the Organization of Accident Prevention with regard to the "Accident Prevention Programme";
- approved the conclusions of the Working Party on Safety-Oxygen Pipes with regards to 'Precautions during Preparation of Equipment for Use with Oxygen under Pressure '.
- at the request of the ECSC Consultative Committee, examined the proposal for a Council Directive on safety information at the workplace, found it acceptable, and requested its Working Party on the Organization of Accident Prevention to study whether there was a need for additional signs to cover risks specific to the steel industry;
- was informed that the Commission of the European Communities intended to organize information sessions in 1977 for the worker members of safety and health committees in Belgian steel works, in conjunction with the Belgian steel industry unions;
- decided to set up an ad hoc group to advise the Commission of the European Communities on the organization in 1978 of a second symposium on the SISHC's activities;

- record its agreement to the publication of two studies of safety problems linked with the use of hydrogen in the steel industry and one study on the development of safety at Cockerill-Liège.

2.2 One of the decisions taken by the SISHC at its meeting on 25 January 1977 was to set up an ad hoc group to examine the results of the Secretariat's study on accident statistics and their significance, and to present its conclusions on the subject.

The ad hoc group met on 6 April 1977 and after listening to the report by the Secretary of the SISHC (a summary of which is given in section 5.1) and discussing it, the group made the following suggestions to the Steel Industry Safety and Health Commission:

- to distribute the Secretariat's study as quickly as possible, to draw attention to the limited significance of conventional statistical values;
- to organize a more wide-ranging pilot study, to be carried out over a number of years, in conjunction with enterprises wishing to participate, which would forward a set of new statistical indicators every year, calculated and presented in the manner specified;
- to submit all its suggestions to the SISHC in writing.

After this meeting, it was ascertained that all the members of the SISHC agreed to these proposals. As a result, the Commission of the European Communities will undertake a pilot study with the voluntary cooperation of enterprises, as part of the SISHC's activities, beginning in 1978. The information to be forwarded every year by these enterprises includes the following indicators:

- frequency rates (number of accidents per million hours worked)
- apparent incidence rates (number of accidents per hundred registered workers)
- real incidence rates (number of accidents per hundred workers actually working).

These rates will be calculated for various categories of accidents, viz.:

- total accidents to persons
- minor accidents

- lost-time accidents causing not more than 1 day's absence from work
- lost-time accidents not giving rise to permanent disability, but causing between 1 and 21 calendar days' absence from work
- lost-time accidents not giving rise to permanent disability, but causing more than 21 calendar days' absence from work
- fatal accidents or accidents resulting in permanent disability exceeding 20 %.

At the present stage the aim of this study is not to draw up Community statistics but to seek new statistical methods which provide better insight into the 'accident situation' and a more accurate appraisal of the safety performance of any given enterprise.

Once this pilot study has enabled the participants to gain a certain amount of experience with these new indicators, a meeting of delegates from the enterprises concerned and members of the ad hoc group will be held to assess the usefulness of the new method, and to review its advantages and drawbacks and the difficulties that might be involved in implementing the new system. One would thus have a proper basis of information for advising the SISHC on the potential difficulties and advantages of using a method of this kind in the future.

2.3 Another decision taken by the SISHC at its meeting on 25 January was to set up an ad hoc group to advise the Commission of the European Communities on the organization in 1978 of a symposium on the results of the SISHC's work, to be attended by safety officers from industry.

It will be remembered that the symposium held in Luxembourg on 21, 22 and 23 October 1970 to announce the conclusions reached by the SISHC in its work was very successful; more than 700 people from 14 different countries took part.

The aim of the 1978 programme would be to provide interested parties with information on the work done since 1970, and thus to ensure continuity in the popularization of SISHC recommendations.

This ad hoc group met on 16 September 1977 and it was suggested that the programme for the symposium should, in essence, be as follows:

- 1st day: general aspects of accident prevention
- 2nd day: rescue and first-aid arrangements
- 3rd day: technical problems of safety in the iron and steel industry.

Since then it has been found that it will not be possible to organize a symposium in 1978, owing to lack of funds.

The SISHC finds this regrettable and hopes that in 1979 the Commission of the European Communities will budget for a large enough amount for this project to be possible.

3. ACTIVITIES OF WORKING PARTIES

3.1 Working Party on the Organization of Accident Prevention

This working party met on three occasions in 1977.

At the meeting on 23 and 24 May, part of the time was spent, at the request of the SISHC (decision taken at its meeting on 25 January 1977) on preparations for the discussion, at a subsequent meeting, of special safety signs required at workplaces in the steel industry; and part of the meeting was devoted to a mutual exchange of information on the various aspects of joint consultation with workers or workers' representatives in the steel industry in Community countries.

At the request of the Working Party on Safety - Training, the members of the Working Party on the Organization of Accident Prevention attended a joint meeting of the two working parties. It is described in section 3.3.

At its meeting on 20 December, the Working Party discussed the need for special safety signs at workplaces in the steel industry. Readers are reminded that the Council of Ministers of the European Communities adopted a Directive on this subject on 25 July 1977, the provisions of which will be applicable in all Community Member States as of 1 January 1981 at the latest.

The Working Party's mandate was to draw up and present to the SISHC proposals on the warnings and safety information which ought to be included in Community guidelines for the steel industry, to complement the signs stipulated in the above-mentioned Council Directive.

The Working Party drew up proposals which will be submitted to the Steel Industry Safety and Health Commission at its next meeting.

It also emerged that there was a serious risk of confusion and danger due to the lack of standardization on the colours used to mark pipelines for fluids and containers for compressed gases (either liquefied or gaseous), and that these dangers were further magnified because there had been no standardization at European level of connection fittings for such apparatus. It was decided that a report should be submitted to SISHC on this subject, asking it to urge the Commission of the European Communities to initiate Community-based discussions on the matter at the earliest opportunity.

3.2 Working Party on Safety - Training

The Working Party on Safety - Training held two meetings in 1977.

On 27 May it put the final touches to its conclusions on the subject of the training of safety officers, which will be submitted to the SISHC for approval at its next meeting.

The Working Party also selected the subject for its next study, namely the training of workers' representatives. It was decided that, in preparation for this study, a joint meeting should be held with the Working Party on the Organization of Accident Prevention, since the latter was currently carrying out a study on a topic in the same field (collaboration between workers and their representatives).

This joint meeting was held on 17 and 18 November, and is described in section 3.3 below.

3.3 Working Parties on the Organization of Accident Prevention and Safety - Training

On 17 and 18 November the two Working Parties met and discussed the various forms of joint consultation between workers and/or their representatives on accident prevention, and the types of training they would need to enable them to make an effective contribution.

It emerged from the discussion that the tasks and duties of workers' delegates varied considerably depending on the country concerned and on legislation collective agreements and traditions, and that there was frequent overlap between their tasks and similar work done by other bodies, other persons or as part of bigger schemes.

In order to obtain an overall view of practice in different countries, the Working Party appointed one rapporteur per country to draw up a list, based on a classification system, of the various mandatory (legal or contractual) and non-mandatory tasks of accident-prevention bodies at works and enterprises in his country.

It was agreed that another joint meeting should be held in April 1978 to examine the outcome of this exercise.

3.4 Working Party on Safety - Gas Lines

There were two meetings of this Working Party in 1977.

On 14 and 15 July, it put the final touches to the conclusions on water seals and drain seal pots on gas lines.

Water seals are created by having a gas line of a particular shape, and are designed to provide a way of cutting off the gas line by means of a mass of water at much higher pressure than the manometric level corresponding to the maximum gas pressure in the network. This enables workers to prepare the downstream section for repairs, alterations and extensions of the network.

Drain seals are devices designed to collect and drain off the residual moisture from gas which has been cleaned by wet scrubbing, or to seal off the water-seal downpipes and overflow pipes when they are not filled with water.

For process gas installations to function safely, the devices described must satisfy a large number of very different requirements, and these have been set out by the Working Party.

It should be noted, however, that the gases produced in iron and steel making processes are particularly dangerous. Blast furnace gas is highly explosive because it contains a great deal of hydrogen.

At the same meeting, the Working Party undertook a study on the prevention of gas explosions and ways of curbing their effects.

Work on the same topic was continued at the meeting on 15 and 16 December, and it is hoped that it will be completed in 1978.

3.5 Working Party on Safety - Oxygen

The Working Party on Safety - Oxygen met on two occasions in 1977.

On 20 and 21 June it finalized its conclusions on preventive measures relating to oxygen-enriched atmospheres; the conclusions will be submitted to the Steel Industry Safety and Health Commission for approval at its next meeting.

These exchanges of experience gained are particularly important, because in an oxygen-enriched atmosphere the risks of fire, ignition of clothing, and burns, are especially grave. Moreover, the risk of accidental oxygen enrichment is far from negligible - it may be caused by oxygen leaks, or internal leakage in valves, or by the opening-up, decompression and scouring of lines in preparation for maintenance and repair work.

Then again, oxygen distribution networks have become more common in steelworks, not only because oxygen is used in all iron-refining processes, but also because it is needed for welding and cutting operations in all the shops.

At its meeting on 29 and 30 November and 1 December the Working Party discussed the causes of some recent accidents involving oxygen plant and continued its work on safety in the use of oxygen in LD and LD-AC melting shops.

The Working Party will formulate its conclusions on this topic at its next meeting, but this topic also forms part of an overall study on the use of oxygen in various iron and steel making processes, the findings of which should be available in 1979.

3.6. Working Party on Health - Electric Furnaces

This group of experts held its first meeting in November 1975 and met twice in 1977.

At its second meeting, on 25 April 1977, it drew up its programme of work, agreed on the order in which it would tackle the various parts of its study and held an initial discussion on pollution caused by electric arc furnaces.

On 17 and 18 October, this topic was discussed further, and it emerged that there was a need for extra information on certain specific points, which members agreed to obtain before the next meeting. On that occasion, they will examine a preliminary draft of their conclusions on this part of the study.

3.7. Working Party on Health - Rolling Mills

In 1977 this Working Party, which had previously met only once, held meetings on two occasions.

On 13 April, it prepared its programme of work and held its first discussions about pollution in rolling mills for flat products. It also requested that a works doctor be included on the Working Party.

Action was taken accordingly in time for the Working Party's second meeting on 20 and 21 September. There was further exchange of opinions and information on arrangements to combat pollution hazards in flat-product mills. A draft set of conclusions on this subject will be prepared and examined at the next meeting.

The Working Party also made a number of arrangements for future work.

3.8. Other Working Parties

The working parties which had previously been put on ice (those on Safety - Overhead Travelling Cranes, and on the Use of Explosives at the Blast Furnace) did not meet in 1977. The possibility of a resumption of activities will be studied by the Steel Industry Commission when it draws up its programme of activities for 1978 - 1980.

4. THE CONFERENCE ON SAFETY AND ERGONOMICS AT MELREUX

On 3 and 4 November a conference on safety and ergonomics was organized by the two Belgian steel industry workers' organizations (Centrale des Métallurgistes de Belgique and Centrale Chrétienne des Métallurgistes de Belgique) and sponsored by the Commission of the European Communities.

The aim of this exercise was to provide information for the workers' representatives on safety and health committees at Belgian steel works about the activities of the Commission of the European Communities in the field of safety and health, especially the results of the work done by the Steel Industry Safety and Health Commission. The Secretary of the SISHC gave talks on its activities and on the principles of accident prevention (illustrated by the film on the subject), and one of the members of the Working Party on the Organization of Accident Prevention gave an account of the Working Party's conclusions on the Accident Prevention Programme.

At the conference, which was attended by 130 members of the two unions, there were discussions and information sessions, and participants were divided into 8 groups, each of which presented reports at the plenary session.

While it became clear that a large number of the participants were unaware of the results of Community work (although one of the aims of the conference was of course to provide information on this subject), the most salient conclusion of the exercise was that there is a serious need for information and sharing of experience in the field of industrial health and safety.

The Steel Industry Commission hopes that the Commission of the European Communities will in future organize more events of this kind in other Community countries.

5. STUDIES

5.1. Study on accident statistics and their significance

In view of the general difficulty of interpreting industrial accident statistics, the SISHC gave its Secretariat an assignment in 1974 to carry out a study of the significance of accident statistics.

The study would not have been without the cooperation of 16 steel works in three Community countries, which provided figures on accidents recorded between 1965 and 1974.

The results of the study were presented to the Steel Industry Safety and Health Commission at its meeting on 25 January 1977, and an ad hoc group of SISHC members was asked to examine them in detail and draw up proposals on the possibility of continuing the experiment.

The ad hoc group's proposals and the decision taken on this matter by the SISHC are described in section 2.2.

The conclusions of the study, which was based on 961.094 accident injuries affecting an average number of 96,000 workers over a real working period of 1.738.752.000 hours, are summarized below.

Conventional accident statistics, expressed in terms of frequency rates and severity rates, were originally based on the recommendations of the International Labour Office. These recommendations were implemented in very different ways in different countries and as a result, national statistics are not comparable¹⁾. Also, the way in which they are expressed makes them difficult to visualize (the frequency rate is the number of accidents per million hours, a length of time which it is rather difficult

(1) Community statistics on industrial accidents in the iron and steel industry (and accidents in coal mines) are however comparable, as the same definitions and calculation methods are used in each country.

to imagine - approximately 400 years - while the severity rate is based on the number of days lost after accidents, per 1,000 hours - and the basic unit of this ratio is undefineable). Moreover, and this is more serious, the rates do not show the individual accident risk run by the worker, because since working hours have been gradually reduced over the past 20 years, the rates shown do not correspond, in time, to the same number of workers.

Using the figures for each year (1965 to 1974) provided by the 16 works participating in the study, a series of annual frequency rates was drawn up for each of them, for accidents of different degrees of severity (with or without lost time; lost time of more or less than 21 days; permanent disability of more or less than 20%, and groupings of these categories).

The results for each works were plotted on a graph and it was found that the trends in the rates over the 10 years studies differed from each other, but that there were clear parallels between:

- total accidents to persons, and minor accidents
- accidents causing lost time or permanent disability (standard frequency rates), and accidents not giving rise to permanent disability but causing less than 21 days' lost time
- accidents giving rise to permanent disability, and accidents giving rise to permanent disability of less than 10%.

These findings indicate that the conventional frequency rate (number of accidents with at least one day's lost time per million hours worked) is influenced primarily by the number of accidents causing brief absence from work and that it is not representative of total accidents to persons, nor of serious accidents (i.e. fatal accidents and lost-time accidents).

The conclusion that the conventional frequency rate was not representative of very serious accidents was further borne out by the fact that the works with the lowest conventional frequency rate of all 16 works, for the whole of the 10 year period concerned, actually had a rather poor record for very serious accidents (i.e. fatal accidents or those causing permanent disability of more than 10%). On the other hand, the works with the best results for very serious accidents had one of the worst frequency

rates. The value of using other rates has however not yet been properly demonstrated. The Steel Industry Safety and Health Commission took the view that the conclusions should be checked with a larger sample and it decided, on a proposal by the ad hoc group, to launch a pilot study starting in 1978 with enterprises willing to cooperate.

5.2. Study of very serious accidents

It will be remembered (cf. 8th report) that AFORSID (Association pour la formation en sidérurgie) was asked to carry out a study, under the sponsorship of ASSIMILOR (Association de la sidérurgie et des mines de fer lorraines), on the causes of very serious accidents in a number of steel mills in Lorraine.

The aim of the study was threefold:

- to draw up a standard questionnaire to be used for enquiries into very serious accidents and possibly other accidents also;
- to provide indications of the causes or groups of causes of very serious accidents recorded in the works concerned between 1970 and 1976, and thus improve arrangements for the prevention of such accidents;
- to establish a method of research into the causes of very serious accidents which would be applicable in other regions or for other periods of time.

The study was divided into three separate stages; the first was to draw up, on the basis of an accident sample, the standard questionnaire form to be used for descriptions of all the very serious accidents that had occurred between 1970 and 1976 in the works concerned. This work was completed in 1977, and the standard questionnaire devised is the fruit of a great deal of research, taking account of the latest theories of accident causation.

It is currently being used by the works taking part in the study, to draw up a report on every very serious accident between 1970 and 1976 (this is the second stage of the study, and should be completed in 1978).

In the third stage, all the standard questionnaires will be processed by computer to find the most common causes and especially the interactions between various causes. It is hoped that it will be possible to carry out this analysis in 1979.

This study is of particular importance because it may help to pinpoint the causes of, and thus prevent, very serious accidents - the accidents which have the worst human, social, moral, economic and legal consequences and which provide the best justification for accident prevention work.

6. ACCIDENT STATISTICS

The statistics shown in the tables below are taken from the publication entitled "Social statistics - Industrial Accidents - Iron and Steel Industry" published by the Statistical Office of the European Communities.

Readers are reminded that the statistics are drawn up annually by the Statistical Office, in conjunction with steel companies and organizations in the various countries, and not by the Steel Industry and Health Commission.

The tables give statistics for the Community as a whole (the Six from 1960 to 1976, and the Nine from 1974 to 1976) and for individual Community countries.

The comments made below refer only to the statistics for the Community as a whole; the SISHC has deliberately refrained from comment on the national results.

Very satisfactory progress has been made in recent years in respect of fatal accidents; the frequency rate of such accidents - which was in the region of 0.20 at the beginning of the 60's - had fallen to 0.12 in 1975 and 0.11 in 1976 in the Community of Six, and is even better for the Community of Nine and for recent years.

The two tables on fatal accidents in the Community show the number of fatalities per million tonnes of crude steel produced, and these figures have dropped sharply.

For accidents causing at least one day's absence from work, the frequency rate in the Six in 1975-1976 was similar to that in 1960-1961, whereas the frequency rate for accidents causing absence of more than three calendar days improved slightly in the more recent period. This improvement seems to be due to an increase in the proportion of accidents causing only brief absence from work (between 1 and 3 days).

All the same, the results are far from satisfactory, since the figures were even better in the period from 1962-1971.

In the Community of Nine, there was a slight improvement between 1974 and 1976.

So although there has been progress in respect of fatal accidents, which is of course important, the trend in total accidents recorded has been less favourable.

The SISHC has already drawn readers' attention, in several of its annual reports, to the increasingly evident difficulties of interpreting accident statistics.

In point of fact, it is always difficult to draw conclusions about fatal accidents because the fatal-accident statistics are based on very small numbers, whereas the statistics for lost-time accidents may be influenced by socio-economic and legal factors which, depending on circumstances, may or may not have a bearing on the definition of lost-time accidents.

Tables XV and XVI enable us to compare the frequency rates for lost-time accidents with the levels of production and the labour force.

There may well be a certain correlation between accidents and these other factors, but it would be difficult to evaluate and define, especially as the situation is constantly changing.

It has however been noted that between 1966 and 1976, the annual variation in the accident frequency rate was similar to the variation in recruitment of personnel.

A certain parallel was also found between accident rates between 1967 and 1974 and the numbers of foreign workers. But the latter figures are no longer published by the Statistical Office, so further comparisons are impossible.

The Steel Industry and Health Commission hopes that the studies which it has undertaken on statistics will enable us in the not unforeseeable future to arrive at a better understanding of the accident situation.

7. CONCLUSIONS OF THE WORKING PARTIES ADOPTED BY THE STEEL INDUSTRY SAFETY AND HEALTH COMMISSION IN 1977

7.1. The accident prevention programme

The SISHC's five principles of accident prevention, which form the basis of effective accident prevention policy in works, recommend that all accident prevention activities should be combined and coordinated within a uniform programme, that workers' representatives should be consulted on such a programme, and that the programme should take account both of accidents which have actually happened and of the hazards existing in the works.

The document entitled "Accident Prevention Programme" drawn up by the Working Party on the Organization of Accident Prevention contains suggestions as to the contents of such programmes and ways of gradually introducing them.

7.2. Precautions during preparation of equipment for use with oxygen under pressure

Equipment designed for use with gaseous oxygen under pressure must be cleaned very carefully because any traces of lubricants, solvents, dust

or other matter can cause spontaneous combustion of plant, which occurs without the application of external energy, usually during handling of the apparatus. Such accidents can be particularly serious, being accompanied by very long flames and outbursts which usually cause fatal burns to the victims.

To obtain and maintain this degree of cleanliness, a certain number of preparatory measures and precautions are necessary; these operations are described in the document, which also contains a specification on this subject, to be forwarded by steel companies and engineering bureaux to equipment supplier and assembly firms, who will then be required to comply with these instructions.

8. DISSEMINATION OF INFORMATION

8.1. Film on the principles of accident prevention

The purpose of this film which illustrates the principles of accident prevention applied by the Steel Industry Safety and Health Commission, is to provide all levels of management, foremen and workers' representatives with food for thought as regards the organizational aspects of the various accident prevention measures implemented at enterprise level, thus encouraging the improvement of such measures.

Copies of the film have been made available to non-commercial film libraries which distribute scientific and industrial films and also to several professional organizations and other bodies whose aim is to eliminate occupational hazards in the Community countries.

Information received from these distributors and bodies reveals that the film of the principles of accident prevention was seen by a total of 5,840 people at 209 showings in 1977.

8.2. Documents

The various documents (conclusions of the working parties, reports and other publications) issued by the Commission of the European Communities in correction with the work of the Steel Industry Safety and Health

Commission are given in Chapter 10 of this report.

Over 1.100 documents were made available to interested parties (enterprises, professional organizations or bodies involved in safety problems) in 1977.

9. STATISTICAL TABLES

TABLE I

Fatal accidents in the Community of Six

Year	Number of fatalities	Frequency rate (1)	Accident: production ratio (2)
1960	198	0,19	2,71
1961	168	0,16	2,28
1962	192	0,20	2,62
1963	148	0,16	2,02
1964	151	0,16	1,82
1965	167	0,18	1,94
1966	115	0,13	1,35
1967	107	0,13	1,19
1968	136	0,17	1,37
1969	136	0,16	1,27
1970	133	0,16	1,22
1971	115	0,15	1,11
1972	93	0,12	0,82
1973	117	0,12	0,95
1974	114	0,14	0,86
1975	84	0,12	0,80
1976	78	0,11	0,70
1977			
1978			

(1) Number of fatal accidents per million hours worked

(2) Number of fatal accidents per 1.000.000 tonnes of crude steel

Accidents causing absence from work in the Community of Six

Year	No. of workers	Accidents resulting in ≥ 1 day's absence			Accidents resulting in > 3 day's absence		Percentage of accidents resulting in between 1 and 3 day's absence
		Number	f.r.(1)	acc:prod. (2)	Number	f.r. (1)	
1960	494.264	102.686	98	1.405	89.569	86	12,2
1961	501.332	100.656	96	1.369	88.685	84	12,5
1962	469.941	88.142	92	1.207	76.422	80	13,0
1963	464.702	84.496	89	1.154	73.747	78	12,4
1964	468.836	88.395	93	1.067	76.994	81	12,9
1965	460.564	83.479	90	971	72.378	78	13,3
1966	442.123	73.687	85	865	64.000	74	12,9
1967	426.329	66.628	80	741	56.804	68	15,0
1968	418.916	66.962	82	679	57.167	70	14,6
1969	424.273	71.686	87	669	62.201	75	13,8
1970	433.507	76.943	92	705	67.382	81	12,0
1971	428.562	73.882	94	714	63.241	81	13,8
1972	421.098	74.391	97	657	62.777	82	15,5
1973	430.540	80.494	103	656	67.480	87	15,5
1974	443.891	81.710	103	616	68.592	87	16,1
1975	434.932	67.484	96	644	56.996	81	15,5
1976	422.528	68.682	98	622	56.534	81	17,7
1977							
1978							

(1) frequency rate

(2) number of accidents causing absence from work per million tonnes crude steel

TABLE IIISeriousness of accidents in the Community of Six

Year	Number of calendar days lost	Number of hours lost per 1.000 hours worked	Number of days lost per accident
1960	1.735.370	9,59	16,9
1961	1.747.758	9,55	17,4
1962	1.576.954	9,21	17,9
1963	1.527.193	8,98	18,1
1964	1.580.937	9,21	17,9
1965	1.492.686	8,88	17,9
1966	1.355.529	8,40	18,4
1967	1.206.785	7,76	18,1
1968	1.202.514	7,91	18,1
1969	1.323.955	8,55	18,5
1970	1.387.454	8,78	18,1
1971	1.431.769	9,15	19,4
1972	1.401.376	9,09	18,8
1973	1.462.756	9,31	18,2
1974	1.494.021	9,22	18,3
1975	1.283.224	8,08	19,0
1976	1.232.508	7,97	17,9
1977			
1978			
1979			

Fatal accidents in the Community of Nine

Year	Number of fatalities	Frequency rate (1)	Accidents:production ratio (2)
1974	137	0,13	0,88
1975	110	0,12	0,88
1976	88	0,09	0,86
1977			
1978			
1979			

(1) Number of fatal accidents per million hours worked

(2) Number of fatal accidents per million tonnes of crude steel

Accidents causing absence from work in the Community of Nine

Year	No. of workers	Accidents resulting in ≥ 1 day's absence			Accidents resulting in > 3 day's absence		Percentage of accidents resulting in between 1 and 3 day's absence
		Number	f.r.(1)	acc:prod. (2)	Number	f.r.(1)	
1974	585.267	90.581	85	582	76.394	72	15,3
1975	568.772	74.854	78	598	63.606	67	14,1
1976	548.446	75.568	80	563	63.069	67	16,2
1977							
1978							

(1) frequency rate : number of accidents per million hours worked

(2) number of accidents per million tonnes crude steel

KEY



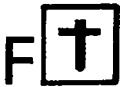
Number of manual-workers on the payroll



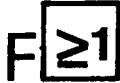
Number of hours worked in the works x 1,000

F

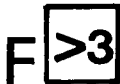
Frequency rate : number of accidents per million hours worked



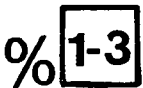
Frequency rate of fatal accidents



Frequency rate of non-fatal accidents with absence from work of at least one day




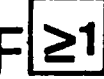




Frequency rate of non-fatal accidents with absence from work of more than three days





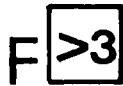
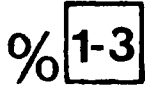


Percentage of accidents resulting in between one and three days' absence




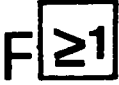
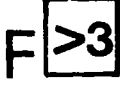

BUNDESREPUBLIK DEUTSCHLAND

			F 	F 	F 	% 
1960	214.671	427.479	0,18	108	95	13,6
1961	214.845	426.250	0,12	102	92	9,8
1962	203.976	386.124	0,20	95	85	10,5
1963	198.184	376.060	0,16	89	79	11,2
1964	200.656	389.527	0,15	97	85	12,3
1965	196.246	376.518	0,19	98	87	11,2
1966	186.913	351.223	0,13	98	80	13,0
1967	179.935	392.045	0,14	86	72	16,2
1968	177.372	336.016	0,18	94	80	14,9
1969	179.616	346.463	0,15	100	87	13,0
1970	181.686	345.182	0,15	105	94	10,5
1971	175.187	310.063	0,15	106	92	13,2
1972	165.488	298.213	0,11	105	90	14,3
1973	169.409	312.292	0,18	113	96	15,0
1974	173.179	314.874	0,13	106	90	15,1
1975	167.823	267.988	0,13	92	79	14,1
1976	162.315	269.589	0,14	94	80	14,9
1977						
1978						



BELGIE - BELGIQUE

			F 	F 	F 	% 
1960	53.361	108.542	0,20	128	100	28,0
1961	52.878	106.915	0,19	122	95	22,1
1962	51.021	107.981	0,19	110	84	23,6
1963	50.662	107.150	0,23	107	82	23,4
1964	52.193	108.605	0,17	114	87	23,7
1965	50.459	108.767	0,18	107	80	25,2
1966	48.164	97.564	0,14	95	70	26,3
1967	47.581	94.790	0,13	90	67	25,6
1968	48.031	95.516	0,18	87	65	25,3
1969	49.043	97.668	0,17	87	66	24,1
1970	50.018	98.347	0,16	93	72	22,6
1971	50.049	94.843	0,17	96	73	24,0
1972	50.017	95.069	0,15	105	62	22,1
1973	51.249	93.505	0,30	112	85	24,1
1974	52.979	96.601	0,17	113	86	23,9
1975	50.857	77.666	0,15	97	74	23,7
1976	48.102	76.941	0,10	105	81	22,9
1977						
1978						





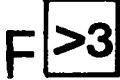
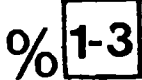
FRANCE

			F 	F 	F 	% 
1960	148.362	343.471	0,22	74	71	4,0
1961	150.312	341.506	0,20	73	71	2,7
1962	128.977	287.720	0,20	73	70	4,3
1963	129.410	282.906	0,14	72	70	2,8
1964	130.129	284.695	0,15	71	69	2,8
1965	126.839	270.871	0,17	67	65	3,0
1966	119.944	251.737	0,12	65	63	3,1
1967	113.013	234.055	0,10	59	58	1,7
1968	107.809	219.408	0,13	57	56	1,7
1969	107.634	218.766	0,20	62	60	3,2
1970	109.274	218.742	0,17	64	62	3,1
1971	107.863	209.250	0,15	68	66	2,9
1972	105.823	199.664	0,13	70	68	2,9
1973	105.785	197.588	0,09	73	71	2,7
1974	108.786	197.838	0,13	79	77	2,5
1975	107.529	179.836	0,13	83	80	3,7
1976	104.140	174.979	0,10	79	76	3,8
1977						
1978						







ITALIA

			$F \uparrow$	$F \geq 1$	$F > 3$	$\% \uparrow$
1960	51.177	111.132	0,15	104	78	25,0
1961	54.532	118.503	0,15	112	82	26,8
1962	57.081	118.145	0,20	110	80	27,3
1963	57.609	122.318	0,15	112	88	21,4
1964	55.665	111.331	0,10	107	84	21,5
1965	55.614	112.587	0,19	102	77	24,5
1966	55.506	108.360	0,16	95	75	21,0
1967	54.640	110.263	0,12	96	75	21,9
1968	54.611	108.322	0,18	91	69	24,2
1969	56.026	102.701	0,14	98	76	22,5
1970	59.287	108.790	0,17	117	91	22,2
1971	62.370	109.731	0,12	121	91	24,8
1972	66.518	114.022	0,12	132	95	28
1973	69.946	116.084	0,08	141	102	27,7
1974	73.902	123.481	0,14	143	105	26,6
1975	74.373	118.260	0,06	144	107	25,7
1976	75.373	123.856	0,06	148	104	29,8
1977						
1978						



GRAND DUCHE DE LUXEMBOURG

			F 	F 	F 	% 
1960	19.705	47.619	0,05	121	115	5,0
1961	19.308	40.646	0,17	117	110	6,0
1962	19.082	39.108	0,23	107	100	7,0
1963	19.902	38.581	0,10	111	103	7,2
1964	19.403	39.279	0,46	112	102	8,9
1965	19.572	38.717	0,21	115	106	7,8
1966	19.552	38.071	0,26	108	100	8,0
1967	19.299	37.121	0,27	104	98	5,8
1968	18.968	36.347	0,22	94	88	6,4
1969	19.045	36.780	0,16	105	97	7,6
1970	19.576	36.734	0,14	102	94	7,8
1971	19.294	35.635	0,17	94	87	7,4
1972	19.041	34.501	0,09	85	74	12,9
1973	19.351	34.693	0,14	82	76	7,3
1974	19.563	34.578	0,35	84	79	6,0
1975	18.198	30.394	0,20	75	68	9,33
1976	17.012	28.768	0,17	82	73	11,00
1977						
1978						







NEDERLAND

			F 	F 	F 	% 
1960	—	—	—	—	—	—
1961	9.457	18.201	0,05	63	54	14,3
1962	9.804	18.597	0,32	69	57	17,4
1963	9.935	18.946	0,11	61	53	13,1
1964	10.790	20.634	0,05	70	61	12,9
1965	11.834	22.372	0,04	69	59	14,5
1966	12.044	22.404	0,04	66	57	13,6
1967	11.868	22.047	0,05	54	48	11,1
1968	12.125	22.292	0,09	55	49	10,9
1969	12.909	23.620	0,08	44	40	9,1
1970	13.666	24.427	0,12	42	38	9,5
1971	13.799	23.953	0,17	47	43	8,5
1972	14.211	24.192	0,17	45	40	11,1
1973	14.800	24.137	0,08	48	42	12,5
1974	15.480	25.331	0,08	43	38	11,6
1975	16.152	26.601	0,04	37	34	8,1
1976	15.586	25.409	0,12	34	32	5,9
1977						
1978						

UNITED KINGDOM







			$F \left[\begin{array}{ c } \hline \dagger \\ \hline \end{array} \right]$	$F \left[\begin{array}{ c } \hline \geq 1 \\ \hline \end{array} \right]$	$F \left[\begin{array}{ c } \hline > 3 \\ \hline \end{array} \right]$	$\% \left[\begin{array}{ c } \hline 1-3 \\ \hline \end{array} \right]$
1973	137.676	270.274	0,15	30	29	3,3
1974	138.767	263.680	0,08	32	29	9,4
1975	130.779	248.694	0,10	28	25	10,7
1976	123.381	240.413	0,04	27	25	7,4
1977						
1978						

IRELAND

			F 	F 	F 	% 
1973	-	-	-	-	-	-
1974	906	-	0	55	45	18,0
1975	644	-	(a)	76	39	48,7
1976	544	-	0	58	49	32,8
1977						
1978						

- (a) 1 tödliche Unfall
 1 fatal accident
 1 accident mortel
 1 infortunio mortale
 1 dodelijk ongeval

DANMARK

			F 	F 	F 	% 
1973	-	-	-	-	-	-
1974	1.705	3.005	0,33	79	63	20,0
1975	1.841	3.222	0,24	88	65	26,1
1976	1.993	3.421	0	75	59	21,3
1977						
1978						

ACCIDENTS AND THE PRODUCTION

COMMUNITY OF SIX

Year	f.r. (1)	Crude steel production 1,000 t	Variation in % (2)	Load factor	Variation in % (2)
1960	98	73.076		95,5	
1961	96	73.511	+ 0,05	91,7	- 3,8
1962	92	73.011	- 0,07	87,5	- 4,2
1963	89	73.218	+ 0,03	83,3	- 4,2
1964	93	82.856	+ 13,2	90,0	+ 6,7
1965	90	85.991	+ 3,8	84,2	- 5,8
1966	85	85.105	- 1,0	78,6	- 5,6
1967	80	89.885	+ 5,6	80,1	+ 1,5
1968	82	98.634	+ 9,6	85,7	+ 5,6
1969	87	107.327	+ 8,8	89,0	+ 3,3
1970	92	109.203	+ 1,8	86,2	- 2,8
1971	94	103.376	- 5,3	76,5	- 10,6
1972	97	113.147	+ 9,5	81,5	+ 5,4
1973	103	122.855	+ 8,6	85,1	+ 3,6
1974	103	132.563	+ 7,9	88,1	+ 3,5
1975	96	104.816	- 20,9	64,5	- 26,8
1976	98	110.980	+ 5,9	65,4	+ 1,6

- (1) f.r. = frequency rate of accidents causing absence from work per million hours worked
 (2) Each column marked "variation in %" shows the variation of the figure in the preceding column as against the previous year.

ACCIDENTS AND THE WORKFORCE

COMMUNITY OF SIX

Year	f.r. (1)	Number of workers at end of year	Variation in % (2)	Foreign workers	Variation in % (2)	Percentage of total workers	Intake (4)	Percentage of total workers	Variation in % (2)
1960	98	482.543		(3)			81.765	16,9	
1961	96	483.351	+ 0,2	(3)			72.320	15,0	- 10
1962	92	479.466	- 0,8	56.050		11,7	73.522	15,3	+ 1,66
1963	89	469.326	- 2,1	55.399	- 1,16	11,8	67.644	14,4	- 8,0
1964	93	477.513	+ 1,7	65.293	+ 17,8	13,7	84.144	17,6	+ 21,5
1965	90	464.707	- 2,7	64.052	- 1,9	13,8	63.424	13,6	- 25,4
1966	85	439.949	- 5,3	58.486	- 8,7	13,3	52.109	11,9	- 17,8
1967	80	423.984	- 3,6	53.809	- 8,0	12,7	43.715	10,3	- 16,1
1968	82	421.658	- 0,5	56.039	+ 4,1	13,3	57.640	13,7	+ 31,8
1969	87	432.122	+ 2,5	64.570	+ 15,2	14,9	80.155	18,6	+ 39,1
1970	92	437.181	+ 1,2	69.115	+ 7,0	15,8	79.894	18,3	- 0,3
1971	94	426.639	- 2,4	67.665	- 2,1	15,9	60.421	14,2	- 24,3
1972	97	426.172	- 0,1	72.058	+ 6,5	16,9	67.084	15,7	+ 11,0
1973	103	439.511	+ 3,1	81.260	+ 12,8	18,5	86.297	19,6	+ 28,6
1974	103	460.772	+ 4,8	84.776	+ 4,4	18,4	80.925	10,4	- 6,2
1975	96	440.592	- 4,4					6,6	- 64,3
1976	98	432.997	- 1,72					9,2	+ 38,4

(1) f.r. = frequency rate of accidents causing absence from work per million hours worked

(2) Each column marked "variation in %" shows the variation of the figure in the preceding column as against the previous year

(3) figure calculated on different basis prior to 1962, as Algerian workers in France were not classed as foreign workers

(4) including movements from one work to another

10. LIST OF DOCUMENTS OF THE
STEEL INDUSTRY SAFETY AND HEALTH COMMISSION

LIST OF DOCUMENTS

of the Steel Industry Safety and Health Commission

Memorandum on the prevention of accidents in the Swedish iron and steel industry - 1966 (d.f.i.n.)	out of print
Report on the information seminar held on 29 and 30 November 1966 - 1967 (d.f.i.n.)	free
Application of the principles of accident prevention in the United Kingdom - 1968 (d.f.i.n.)	free
Principles of training in industrial safety - 1969 (d.f.i.n.)	free
Adoption and regular use of individual means of protection - 1971 (d.f.e.i.n.)	free
Symposium on accident prevention - Luxembourg, 21, 22 and 23 October 1970 - 1972 (d.e.f.i.n.)	Bfrs 300
Information seminar in Dortmund, on 20 and 21 October 1971 (d)	free
Principles of accident prevention - 1973 (d.e.f.i.n.)	free
The accident prevention policy on the British Steel Corporation - 1973 (d.f.i.n.)	free
First Aid and Rescue - revised edition, 1977 (d.e.f.i.n.)	£ 5
Detailed study of all accidents, with a view to preventing those causing injury - 1977 (d.e.f.i.n.)	£ 4,80

Check questionnaire of the accident prevention organization within the enterprise - 1974 (d.e.f.i.n.)	free
Overhead travelling cranes:	
- Access to the cabin of an overhead travelling crane - 1968 (d.f.i.n.)	free
- Selection and training of crane-drivers - 1970 (d.f.i.n.)	free
Tapping the blast furnace - 1977 (d.e.f.i.n.)	£ 4,80
Maintenance and repair work on gas lines and apparatus:	
- Construction requirements - 1968 (d.f.i.n.)	free
- Personal protection; monitoring and detection of gases - 1970 (d.f.i.n.)	free
- Insulating and degassing lines - 1973 (d.f.i.n.)	free
Oxygen:	
- Oxygen pipe connections - 1969 (d.f.i.n.)	free
- Shut-off and control devices - 1970 (d.f.i.n.)	free
- The design, construction, location and operation of fittings in oxygen installations - 1971 (d.f.i.n.)	free
- Filters, intermediate storage vessels, measurement equipment of importance for safety, lubrication, degreasing of oxygen lines and equipment - 1973 (d.f.i.n.)	free
- Flexible pipes - 1974 (d.e.f.i.n.)	free

Bibliographies:

- Problems of lifting, the use of explosives in the blast furnace - 1967
(d.f.i.n.) free

- ECSC publications, problems of the iron and steel industry, anti-collision devices for overhead travelling cranes, handling cost of accidents - 1968
(d.f.i.n.) out of print

- Noise
(d.f.i.) free

- Transport and handling
(d.f.i.) free

- First report of the Steel Industry Safety and Health Commission - 1969
(d.f.i.n.) free

- Second report of the Steel Industry Safety and Health Commission - 1970
(d.f.i.n.) free

- Third report of the Steel Industry Safety and Health Commission - 1971
(d.f.i.n.) free

- Fourth report of the Steel Industry Safety and Health Commission - 1972
(d.e.f.i.n.) free

- Fifth report of the Steel Industry Safety and Health Commission - 1973
(d.e.f.i.n.) free

- Sixth report of the Steel Industry Safety and Health Commission - 1974
(d.e.f.i.n.) free

- Seventh report of the Steel Industry Safety and Health Commission - 1975
(d.e.f.i.n.) £ 0,70

- Eighth report of the Steel Industry Safety and Health Commission - 1976
(d.e.f.i.n.) £ 0,70

FORTEGNELSE OVER MEDLEMMERNE AF DET ALMINDELIGE UDVALG
OG ARBEJDSGRUPPERNE

LISTE DER MITGLIEDER DES ALLGEMEINEN AUSSCHUSSES
UND SEINER ARBEITSGRUPPEN

LIST OF THE MEMBERS OF THE STEEL INDUSTRY SAFETY
AND HEALTH COMMISSION AND ITS WORKING GROUPS

LISTE DES MEMBRES DE LA COMMISSION GENERALE
ET DE SES GROUPE DE TRAVAIL

ELENCO DEI MEMBRI DELLA COMMISSIONE GENERALE
E DEI SUOI GRUPPI DI LAVORO

NAMEN VAN DE LEDEN VAN DE ALGEMENE COMMISSIE
EN VAN HAAR WERKGROEPEN

COMMISSION GENERALE DE LA SECURITE ET DE LA SALUBRITE DANS LA SIDERURGIE
ALLGEMEINER AUSSCHUSS FUR DIE ARBEITSSICHERHEIT UND DEN GESUNDHEITSSCHUTZ IN DER EISEN- UND STAHLINDUSTRIE
COMMISSIONE GENERALE PER LA SICUREZZA E LA SALUBRITA' NELL'INDUSTRIA SIDERURGICA
ALGEMENE COMMISSIE VOOR DE ARBEITDSVEILICHEID IN DE IJZER-EN STAALINDUSTRIE
STEEL INDUSTRY SAFETY AND HEALTH COMMISSION

DEUTSCHLAND

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European Communities -- Commission

Ninth Report of the Steel Industry Safety and Health Commission (1977)

Luxembourg: Office for Official Publications of the European Communities

1978 — 64 p. — 21 x 29,7 cm.

DA, DE, EN, FR, IT, NL

ISBN 92-825-0458-1

Catalogue number: CA-24-78-693-EN-C

BFR 150

DKR 26,30

DM 9,60

FF 21,50

LIT 4000

HFL 10,30

UKL 2.60

USD 4.70

The 9th report of the Steel Industry Safety and Health Commission provides a rundown of the activities of this commission and its working parties in 1977, and analyses the studies it has completed or which are under way and the documents it has drawn up.

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Catalogue number: CA-24-78-693-EN-C