

COMMISSION OF THE EUROPEAN COMMUNITIES

**TWELFTH REPORT OF THE MINES
SAFETY AND HEALTH COMMISSION**

YEAR 1974

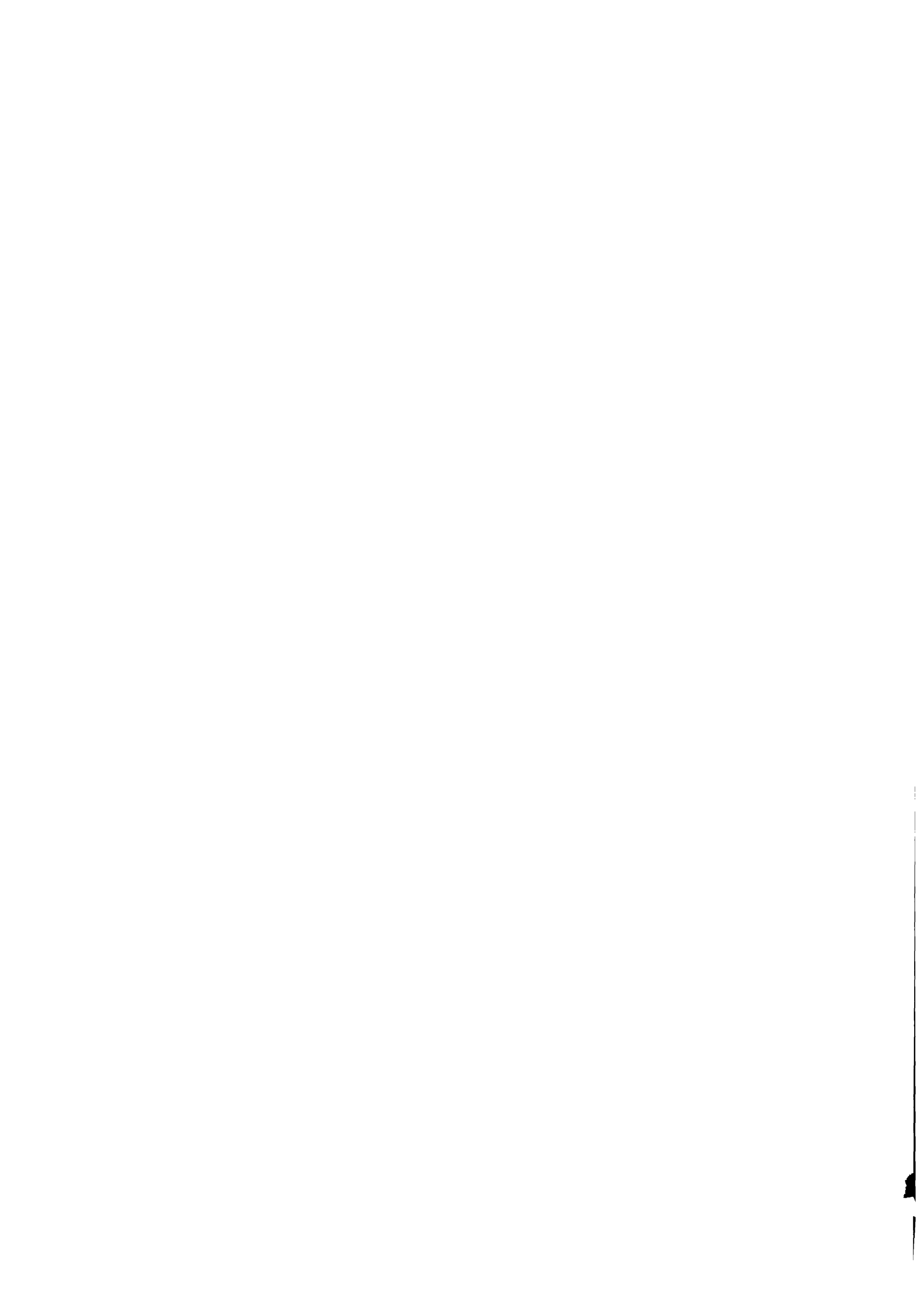
LUXEMBOURG, 11 JULY 1975

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10. Bibliography.

Have been printed separately :

1. Summary of current techniques in shaft winding and rope haulage with special reference to the design of winding engines (ARNOLD)
2. The safety requirements for brakes on winding engines and winches in the shaft winding plant of the German mining industry (HÄUSLER)
3. Shaft winding and safety (HOISCHEN)

FOREWORD BY THE CHAIRMAN

This Report is the latest in a long line of annual reports and should be considered an integral part of the series. It covers the year 1974, in which the responsibilities of the Mines Safety and Health Commission were extended to embrace all mineral extracting industries, petroleum and gas included. It would thus appear timely to give a brief account of the origin of the Commission and the essential features of its mandate and activities, as was previously done in the foreword to the Fourth Report (1967).

Following the mine disaster of 8 August 1956 at Marcinelle (Belgium), in which 262 miners died, a Conference on Safety in Coal Mines was held in Luxembourg. It comprised representatives of governments, employers and workers of the six countries of the E.C.S.C., and observers from the United Kingdom and I.L.O. After 5 months unremitting work, collaborative effort resulted in a report containing over 300 recommendations for action by governments which were to have an important influence on future safety requirements. At a meeting on 9 and 10 May 1957 the representatives of member states, meeting in the Council of Ministers, set up the Mines Safety Commission to continue the work of this important conference and to seek quick solutions to the problems of safety in coal mines.

The terms of reference and rules of procedure of the Mines Safety Commission were extended, to include factors affecting health, on 11 March 1965 (Annex II). By a Council decision of 27 June 1974 its terms of reference were extended to cover all mineral extracting industries, but its duties were otherwise unchanged.

Each Member State has two government representatives, one employers representative and one workers' representative on the Mines Safety and Health Commission (see list, Annex IV).

The Chairman of the Mines Safety and Health Commission (currently Dr. HILLERY) is a Member of the Commission of the European Communities, which replaced the High Authority of the European Coal and Steel Community. The Secretariat and general conduct of operations are also the responsibility of the Commission, under Article 13 of the rules of procedure. At the end of 1974 the Secretariat comprised 5 mining engineers (1 Secretary and 4 principal administrators), one assistant and 3 shorthand typists.

Under Article 1 of its terms of reference the Mines Safety and Health Commission has a duty to seek information from the Governments of Member States, (who are represented on the Mines Safety and Health Commission by leading officials of the national mining authorities), about developments in safety and health in mines and regulations made in these fields. After studying and comparing experience, it submits proposals to the Governments for the improvement of safety and health. It must, under Article 4 of its terms of reference, keep itself informed of the action taken on these proposals.

The standing orders of the Mines Safety and Health Commission are regularly updated to keep pace with safety problems arising out of mine working conditions (strata conditions, methods of work etc.), the personnel employed and, alas, group accidents also. Thus, on 26 March 1971, 3 additional working parties were set up (Ventilation and Firedamp, Roof Control, Mechanization) bringing to 11 the number of working parties, which are assisted by 8 committees of experts, which the Mines Safety and Health Commission has set up to help it.

Working party reports form the basis of decisions by the Mines Safety and Health Commission which are drafted by a Restricted Committee composed of the Governmental members of the Commission.

Details of the action taken on the basis of such "proposals" are published every other year in the annual reports (annexes to the 5th, 7th, 9th and 11th reports). Virtually all proposals have now been taken up in national regulations.

The annual report ensures that the results of its work are known in government and professional circles; they also reach trade union officials and personnel in the industry by means of special conferences (Chapter 2.7.).

When technical problems are met by working parties, the Mines Safety and Health Commission suggests studies and research (Article 5 of its terms of reference) to improve safety which receive financial assistance from the European Commission; it keeps in touch with the progress of the work and promotes the practical application of results.

The rescue services of all the Member States cooperate closely in the Working Party on Rescue Arrangements, not only by exchanging know-how but also by pooling their resources, particularly for the rescue of trapped miners

Community accident statistics are collected and published in the annual report.

In an effort to reduce the human causes of accidents the Mines Safety and Health Commission has promoted safety campaigns in a number of coalfields, choosing the themes, studying the methods used, and raising funds to finance such campaigns.

In order to comply with the recent Council decision mentioned above the Mines Safety and Health Commission ought now to widen the scope of its initiatives. The problem is how to do this without compromising its current activities in the coal mining sector. It is giving attention to this question and the staff requirements arising therefrom.

1. SECTION I

GENERALITIES ON THE ACTIVITIES OF THE MINES SAFETY AND HEALTH COMMISSION

1.1. INTRODUCTION

1.1.1. The year 1974, covered by this report, is the second year of the enlarged Community including the United Kingdom, Ireland and Denmark which will hereafter be referred to as "the Community of Nine" or "Eur 9".

1.1.2. Coal mining activities

As in the two previous reports, a number of statistics on activities in the coal mining sector, are given. These are based on the records of the Statistical Office of the European Communities, the Statistical Telegram of 17 January 1975 and figures supplied by the national mining authorities (see table which follows).

Coal production in the Community in 1974 was 10 % down on that of the previous year, falling from 270 to 243 million tonnes. The fall was 16.1 % in the United Kingdom, where it was partly due to a miners strike early in the year, which caused production losses estimated at 16 million tonnes (12.3 %).

Monthly statistics, however, showed some slowing down of the decline in production during the last few months of the year in Belgium, France and Germany and an upturn in the United Kingdom.

Despite the crisis situation on the energy market, however, a further cutback in production capacity was noted (1.2 million tonnes for the United Kingdom and 9.4 million tonnes p.a. for the Six) due to pit closure programmes which were only partially delayed except in the Netherlands where coal mining was abandoned by the end of 1974.

23 pits were closed in 1974 (52 in 1973), with a production capacity of some 11 million tonnes (18.2 million in 1973).

The number of registered underground workers fell by 5.7 % for the Community, but in the last few months of the year the decline levelled off and numbers even rose slightly.

The rise in output underground per manshift recorded over the past few years did not continue it was down by 3.6 % for the nine, although it rose slightly in Belgium and France.

	G	B	F	I	N	U.K.	Eur.9	Eur.6
Production (million t) 1973	103.6	8.8	25.7	0.002	1.8	130.2	270.3	140.0
Production (million t) 1974	101.5	8.1	22.9	0.003	0.8	109.2	242.6	133.3
% change 1973/1972	- 4.7	-15.3	-13.7	-	-37.8	+ 3.9	- 0.5	- 7.0
% change 1974/1973	- 2.1	- 8.3	-10.9	-	-56.3	-16.1	-10.2	- 4.8
Output per manshift Kg./Shift								
Underground - 1973	4321	2556	2767	-	3309	3583	3631	3762
- 1974	4108	2590	2799	-	4200	3260	3540	3742
% change 1973/1974	- 2.9	+ 1.4	+ 1.2	-	+10.3	- 9.0	- 3.8	- 0.7
Underground workers on books (1 000)								
Average 1973	113.7	20.0	46.7	0.3	2.9	177.7	361.3	183.6
Average 1974	109.3	18.8	42.0	0.2	1.2	169.2	341.0	171.5
% change 1973/1972	- 9.3	-12.3	12.7	-66.7	-40.3	- 5.3	- 8.5	-11.4
% change 1974/1973	- 3.9	- 6.0	-10.1	-33.3	-58.6	- 4.8	- 5.7	- 6.6
Number of working mines at the end of 1973	52	18	36	1	2	261	359	108
Number of working mines at the end of 1974	47	15	31	1	0	250*	344	94
Capacity abandoned in 1974 (million t)	7.9	0.5	0.2	-	0.3	1.2*	10.5	9.4
Pithead coal stocks at the end of 1972 (million t)	9.7	0.5	5.2	0.0	0.7	11.1	27.2	16.0
of 1973 (million t)	9.0	0.2	3.4	0.0	0.4	10.9	23.9	13.0
of 1974 (million t)	1.8	0.2	3.3	-	0.0	6.2	11.6	5.3
% change 1974/1973	- 80.0	+30.1	- 5.1	-	-98.1	-42.9	-51.9	-59.2
Stocks of hard coke at coling plants at the end of 1973 (million t)	7.3	0.2	0.5	0.7	0.0	2.2	11.0	8.8
at the end of 1974	1.7	0.3	0.3	0.7	0.0	1.0	3.9	3.0
% change 1974/1973	-76.8	+31.2	-50.1	+ 2.9	0.0	-56.4	-64.2	-66.2
Percentage of output produced by mechanised means								
in 1972	95.2	87.2	84.7	-	87.3	91.1	91.7	92.4
in 1973	95.5	86.7	86.9	-	87.3	98.1	95.6	93.2
in 1974	96.9	91.3	89.2	-	98.2	93.3	96.6	95.2
Percentage of powered support								
in 1972	55.4	40.3	37.0	-	38.9	89.6	67.6	50.3
in 1973	55.5	43.1	40.0	-	50.4	92.4	71.5	52.1
in 1974	75.7	54.8	40.6	-	49.7	94.4	80.0	63.2

* = NCB mines

1.1.3. Overall accident figures

These figures could not be shown on the same basis for both the Six and the United Kingdom, where a different system of accident classification from the "Six" is used.

1.1.3.1. For the Community of Six

- 1.1.3.1.1. Accidents resulting in an absence from work of 4 to 20 days were 34 797 for a total of 313 million man-hours, i.e. a rate of 110.97 accidents per million man-hours (mio/h) compared with a rate of 112.77 per mio/h in 1973 (out of a total of 37 384 accidents).
- 1.1.3.1.2. Accidents resulting in an absence from work of 21 - 56 days were 15 875, i.e. a rate of 50.62 per mio/h compared with 52.26 in 1973 (out of a total of 17 325 accidents).
- 1.1.3.1.3. Accidents resulting in an absence from work of more than 56 days were 5 054, i.e. a rate of 16.12 per mio/h compared with 16.77 in 1973 (out of a total of 5 560 accidents).
- 1.1.3.1.4. There were 143 fatal accidents (47 of which occurred in two collective accidents), i.e. a rate of 0.456 per mio/h compared with 0.413 in 1973, when there were 137 fatalities, 9 of them in one collective accident.
- 1.1.3.1.5. The total number of persons injured (including casualties requiring at least 4 days' absence from work and fatalities) was 55 369, i.e. a rate of 178.16 per mio/h compared with 60 406 casualties and a rate of 182.22 per mio/h in 1973.

1.1.3.2. For the United Kingdom

The number of persons fatally injured in 1974 was 37, i.e. a rate of 0.138 per mio/h compared with 74 fatalities and a rate of 0.241 per mio/h in 1973.

- 1.1.3.3. Details and comments on these statistics are given in section IV.

1.2. GENERAL ACTIVITIES OF THE MINES SAFETY AND HEALTH COMMISSION

1.2.1. Staffing of Secretariat - Meetings held

The two posts for principal administrators which had been vacant since September 1971 and July 1973 were filled on 1 March 1974 and 15 August 1974.

The Mines Safety and Health Commission held three meetings; 22 January 1974, 3 May 1974 and 15 November 1974. The Restricted Committee held preliminary discussions on the day before each of these meetings.

The working parties and their committees of experts met 33 times on a total of 39 days and there were in addition 30 restricted meetings.

The total number of meetings held, including the special conference for trade unionists, was 77. Because of the lack of typing and office staff the Secretariat were unable to keep pace with the demands of the Mines Safety and Health Commission and its working parties.

1.2.2. Group accidents

Three group accidents (accidents resulting in the death or incapacity for a period of at least eight weeks of not less than five victims) occurred in 1974 and were immediately reported to the Secretariat of the Mines Safety and Health Commission. They were: a fall of ground in a development heading at Sachsen (Germany) on 17 January 1974 (5 dead, 2 severely injured), a rock burst at the same colliery on 28 June 1974 (4 dead, 3 severely injured), a firedamp and coal-dust explosion at No. 3 Mine of the Lens Complex at Liévin (42 dead) on 27 December 1974.

Study of these accidents by the Mines Safety and Health Commission is still at an early stage, as the first two involve many technical problems and the third occurred very late in the year. The Mines Safety and Health Commission also continued its investigations of the following accidents:

- inrush of water at Lofthouse (United Kingdom), on 27 May 1973 (7 dead);
- extensive fall of roof at Seafield on 10 May 1973 (5 dead);
- winding accident at Markham (United Kingdom), on 30 July 1973 (18 dead);
- rock burst at Sachsen, 8 August 1973 (9 dead).

Reports on these accidents are included in Section III and Chapters 2.2. and 2.10.

1.2.3. Decisions of the Mines Safety and Health Commission

1.2.3.1. The Mines Safety and Health Commission either approved or took the decisions given below on the reports of its working parties in the following fields: measures to combat coal-dust explosions, health (dust), electricity, ventilation and firedamp and mine fires.

1.2.3.1.1. Information report on procedures for neutralizing dust using salt pastes, powders and flakes, adopted on 22 January 1974 and published as Annex VI to the the 11th Report.

1.2.3.1.2. Information report on water barriers for containing dust explosions underground, adopted on 22 January 1974 and printed as Annex VII of the 11th Report.

1.2.3.1.3. Report on triggered barriers and a recommendation on this installation underground, adopted on 3 May 1974 and published as Annex VIII to the 11th Report.

1.2.3.1.4. Report on haulage powered by linear motors, with conclusions and recommendations, adopted on 3 May 1974 and published as Annex IX to the 11th Report.

1.2.3.1.5. Guidelines concerning the design and use of coal getting and heading machines relating to the reduction of airborne dust, approved on 3 May 1974 and published as Annex XI to the 11th Report.

With the approval of the Mines Safety and Health Commission the five reports above were published in the previous Report to ensure more rapid dissemination.

1.2.3.1.6. On 15 November 1974 the Mines Safety and Health Commission approved a document on the minimum conditions to be satisfied before any exemption raising maximum permitted firedamp limits could be considered. It is summarized in Chapter 2.8. and printed in full as Annex V to this Report.

1.2.3.1.7. First report on tests and criteria of flammability of conveyor belts with fabric cores used in coal mines in the European Community, adopted by the Mines Safety and Health Commission on 15 November 1974; summarized in Chapter 2.1. and printed in full as Annex VI to this Report.

- 1.2.3.1.8. Fifth report on specifications and testing conditions relating to fire-resistant fluids used for power transmission. This report was adopted by the Mines Safety and Health Commission on 15 November 1974 and is summarized in Chapter 2.1. As previous reports in the same series had aroused world-wide interest and had been very widely distributed, the fifth report, like its predecessors, was printed separately and is not included among the annexes to the 12th Annual Report. A copy is, however, provided with this Report.
- 1.2.3.1.9. Annex to the "Guidelines concerning the design and use of coal getting and heading machines relating to the reduction of airborne dust". This document gives examples of how the guidelines already published as Annex XI to the 11th Report might be applied. The Working Party on Health in Mines had been asked to provide such examples by the Mines Safety and Health Commission when the above report was adopted on 3 May 1974. Their purpose is to assist users in the choice and operation of devices for use with coal getting and heading machines (Annex VII).
- 1.2.3.1.10. Decision on the questions submitted by CENELEC¹⁾ on the design specifications to be incorporated in the General Requirements for electrical apparatus for use in gassy mines.

The Mines Safety and Health Commission delivered agreed views on

- the maximum surface temperature of electrical equipment
- oil-filled switching and isolating devices
- provision for cutting off the source of energy and for locking apparatus in the open position by means of a padlock.

The Mines Safety and Health Commission was, however, unable to give an opinion on a fourth question concerning the prohibition of the use of light alloys for enclosures of electrical equipment for use in gassy mines.

These opinions are set out in Chapter 2.3. and are appended to this Report as Annex VIII.

1) European Committee for Electrotechnical Standardization

1.2.3.1.11. On 15 November 1974 the Mines Safety and Health Commission decided to inform governments of the danger of CH₄ accumulations beneath armoured conveyors, and of the advisability of systematic monitoring of CH₄ beneath such conveyors in the various coal fields.

It has instructed the Working Party on Ventilation and Firedamp to investigate measures to combat this danger. The Secretariat will provide the necessary liaison between this Working Party and the Working Party on Mechanization which has been instructed to investigate the possible adverse effects of measures proposed by the Working Party on Ventilation and Firedamp. Activities resulting from this decision are described in Chapter 2.8.

1.2.3.1.12. When the first report on conveyor belts was adopted, also on 15 November 1974, it was decided that the toxicological aspects should be studied by a group of experts including technicians and toxicologists.

1.2.3.1.13. When the winding accident at Markham was studied on 22 January 1974, the Mines Safety and Health Commission decided to extend the terms of reference of the Working Party on Winding Ropes and Shaft Guides to include winding engines and winches. The Working Party will henceforth be known as the Working Party for Winding Engines, Winches, Ropes and Shaft Guides. It will study the circumstances surrounding this accident and in collaboration with the committee formed for the same purpose in the United Kingdom, will submit a report on any necessary measures.

1.2.3.1.14. On 15 November 1974 the Mines Safety and Health Commission extended the terms of reference of the Working Party on Health in Mines to include control of dust caused by the use of powered supports and underground crushers.

1.2.3.1.15. The Mines Safety and Health Commission took a decision intended to eliminate difficulties hampering research into dust control undertaken with financial assistance from the Commission. To avoid any delay in the comparative study of dust sampling and measuring instruments and methods as a result of administrative difficulties arising when the instruments have to be used underground in the various coal fields, the following decision was taken:

- the mining authorities will for the time being accept approval certificates issued by other Member States for underground dust samplers when these instruments are used for experimental purposes. A simplified procedure will be followed in determining the relevant conditions;
- the current terms of reference of the Working Party on Electricity envisage the establishment of joint certification procedures.

1.2.4. Dissemination of information - Conference for trade unionists at Haltern (Germany)

This conference was held on 25, 26 and 27 November 1974 at Haltern. It was organized by the IG-Bergbau und Energie in collaboration with the Secretariat of the Mines Safety and Health Commission and received financial support in accordance with the budget provisions. The conference was attended by 38 union leaders from the ICF TU (IG-Bergbau und Energie for Germany, the National Union of Overmen, Deputies and Shotfirers for the United Kingdom, the FO for France, the FGTB for Belgium, the CTSL and UIL for Italy, the LAV for Luxembourg). The National Union of Mine Workers and the Federation Internationale des Syndicats Chretiens des Mineurs did not attend. The German members of the Mines Safety and Health Commission, representatives of the Ruhrkohle AG and the IG-Bergbau attended and spoke at the conference. Visits to a mine and other industrial installations were organized. A brief account of this conference is given in Chapter 2.7.

1.2.5. Community safety campaigns

Community safety campaigns sponsored by the Mines Safety and Health Commission after studies by the Working Party on Psychological and Sociological Factors affecting Safety were conducted in the Ruhr, in Saarland, in Campine and in France. They received a 100 % subsidy and the available results (which are to be studied by the Working Party) show that considerable interest was aroused.

1.2.6. Extension of the responsibilities of the Mines Safety and Health Commission

On 22 January and 3 May 1974, the Mines Safety and Health Commission considered the draft Council Decision of 30 November 1973 (see 11th Report 1.2.4.) on the establishment of a General Committee on Safety at Work for all industries except the mineral-extracting industries, and on the extension of the responsibilities of the Mines Safety and Health Commission to all mineral-extracting industries.

It followed with interest the discussion of this question in the Council of Ministers, and suggested amendments to the Commission's draft, proposing inter alia that gas and oil be included in the extractive industries as the reservations originally expressed by the Mines Safety and Health Commission in this connection no longer applied in view of the establishment of a General Committee for Safety at Work.

Like the Commission, it opposed subordinating the Mines Safety and Health Commission to the General Committee on Safety at Work as had been advocated in some quarters in the interests of unifying the departments responsible for industrial safety and health.

Having regard to the opinions of the European Parliament, the Economic and Social Committee and the ECSC Consultative Committee which had submitted amendments similar to those of the Mines Safety and Health Commission, the Council rejected the proposal that the Mines Safety and Health Commission should be subordinated to the General Committee on Safety at Work and on 27 June 1974, took the following Decisions:

- "Council Decision on the setting up of an Advisory Committee on Safety, Hygiene and Health Protection at Work" (74/325/EEC. Official Journal of 9.7.1974);
- "Council Decision on the extension of the responsibilities of the Mines Safety and Health Commission to all mineral-extracting industries" (74/326/EEC. Official Journal of 9.7.1974).

These two Decisions are printed as Annex IX.

The responsibilities of the Advisory Committee cover all sectors of industry except the mineral-extracting industries.

The Mines Safety and Health Commission is responsible for preventive action in all mineral-extracting industries (including gas and oil) except simple excavation (i.e. excavation without extraction of useful products) and matters involving ionizing radiation. The mineral-extracting industries include the operations of prospecting, extracting and preparing minerals but not the processing of such extracted materials.

The Mines Safety and Health Commission will continue to work within its terms of reference, which are otherwise unaltered.

Article 2 (2 d) of the decision setting up the Advisory Committee provides that the latter shall, in cooperation with the Mines Safety and Health Commission define the criteria, aims and methods of evaluation of the level of protection.

The Decision on the extension of the responsibilities of the Mines Safety and Health Commission applies to the underground activities of the mineral-extracting industries as from July 1974 and to all activities of these industries as from 1 January 1976.

At its meeting on 15 November the Mines Safety and Health Commission began to consider how to implement these decisions and in particular the establishment of a Working Party on Oil and Gas which inter alia will investigate the safety of divers employed in oil prospecting in the North Sea in collaboration with the other international bodies concerned with the problem, especially Working Party III of the London Conference.

2. SECTION II

ACTIVITIES OF THE WORKING PARTIES

2.1. CHAPTER A. RESCUE ARRANGEMENTS, MINE FIRES AND UNDERGROUND COMBUSTIONS

2.1.1. This Working Party held three plenary meetings on 18 March, 22 May and 14 October 1974 (the last taking place on CERCHAR premises at Verneuil). Meetings of the committees of experts were held as follows:

- Conveyor belts : 5 meetings, of which 3 were plenary;
- Fire-resistant fluids : 7 meetings, of which 2 were plenary;
- Stabilization of ventilation : 14 meetings, of which 2 were plenary;
- Self-rescuers (anti-CO masks) : 1 meeting.

2.1.2. The Working Party and its committees of experts continued the work in progress described in the 11th Report. In addition, work on self-rescuers was resumed and a small group of experts was formed to harmonize specifications and methods of testing this apparatus.

The work on conveyor belts and fire-resistant fluids resulted in two reports which were adopted by the Mines Safety and Health Commission. The activities of these two committees of experts are described below.

2.1.3. Tests and criteria of flammability of conveyor belts used in coal mines

As the international safety standard ISO R 340 had proved inadequate in a number of mines, a group of experts was instructed by the Working Party in 1972 to compare the various flammability standards and to propose new standards better suited to conditions underground. As mentioned on page 12 of the 11th Report, the work carried out in 1973 consisted of comparative testing at the various test centres using the ISO tests, the British BARTEL test, the TREMONIA full-scale fire gallery test, the reduced-scale TREMONIA test, the Netherlands and Belgian propane burner test and the British drum friction test.

In view of the urgent need for more reliable tests than that specified in ISO R 340, the committee of experts proposed two tests:

the propane burner test in a gallery of approximately 4 m², and the drum friction test, as both are of proven effectiveness in Belgium and the Netherlands, while the drum friction test has been successfully employed in the United Kingdom.

The experts' report was redrafted with formal modifications, and adopted by the Working Party on 22 May 1974.

It was finally adopted by the Mines Safety and Health Commission on 15 November 1974 with the title "First report on tests and criteria of flammability of conveyor belts with fabric cores used in coal mines in the European Community".

It is understood that this is a first report, and that governments are clearly entitled to insist on other tests in addition to the two prescribed tests.

The Mines Safety and Health Commission requested the group of experts to continue to conduct reduced-scale tests and the tests recommended in the report in order to devise a simple supplementary or single test, which could be used for quality control and would indicate whether belts provided an adequate degree of safety. To this end, the results of the tests would be compared with those obtained in the full-scale TREMONIA gallery which enjoys help from Community funds for this purpose.

At the same time consideration is to be given to tests suitable for belts with metal cores.

The toxicological aspects of fumes resulting from belt fires is also to be studied by a group of experts including technicians and toxicologists.

Many comparative tests were conducted in 1974 by the National Coal Board, by CERCHAR, at the TREMONIA mine and in Hasselt and Pâturages in Belgium.

These tests will be continued and the results studied in 1975.

2.1.4. Fire-resistant fluids

On pages 13, point 2.1.4.1. of the 11th Report mention was made of the fact that there were major differences in the objectives of the flammability tests for hydraulic fluids used to transmit power.

On 22 June 1973, the Mines Safety and Health Commission decided that these different criteria should be harmonized and as this cannot be done immediately it asked the Working Party to draw up a 5th report listing separately the specifications and test conditions contained in the 4th report, which apply in the six founder members of the Community, and those in force in the United Kingdom.

The committee of experts drafted this document, which was approved by the Working Party on 14 October 1974 and adopted by the Mines Safety and Health Commission on 15 November 1974.

The first four sections of this report update the criteria set out in the 4th report, while the other three sections cover test conditions in the United Kingdom.

Until the results of the work on harmonization are available, the mining authorities in each country must decide which sections of the report are to be implemented in their own regulations as both types of specification, despite the differences of approach, have given generally satisfactory results both in the United Kingdom and in the six founder Member States.

Work on harmonization began in the second half of the year.

2.1.5. Stabilization of ventilation in the event of open fires

As mentioned in the 11th Report (2.1.5.1.), two outside experts were asked to draw up a single document summarizing and unifying the theoretical and practical findings available to date. These experts and the Secretary of the committee of experts met 12 times and drafted a large part of a document, which will be submitted to the committee of experts in 1975.

The committee of experts also met on 6 and 15 February 1974, and 3 September and 2 December 1974. On 6 and 15 February the group of experts discussed a theoretical study by Mr SIMODE applying graphical analysis to the structure of ventilation networks and stabilization theory.

This document (Doc. 3006/75) is available from the Secretariat in French, German and English.

On 3 September 1974 three representatives nominated by the United Kingdom government joined the committee of experts. At the last two meetings the experts reviewed the work carried out before the arrival of United Kingdom delegates, and studied a document entitled "Summary of

the measures taken to stabilize ventilation in the event of fires in certain circumstances (viz. fires in districts, ascensional airways, descensional airways, horizontal airways) for use by engineers and specialists in fires, rescue and ventilation".

The experts also acquainted themselves with a British document "Fires in coal mines - prevention and control" by P. THORP¹⁾ of the National Coal Board, which was presented to an international audience in Montreal in April 1974.

The purpose of this exchange of information is to ensure mutual understanding of aims and methods in this field in the six founder members and in the United Kingdom in order to submit to the Mines Safety and Health Commission in 1975 a report acceptable to all countries of the enlarged Community.

2.1.6. CO Self-rescuers

At its meeting on 22 May 1974, the Working Party on Rescue Arrangements, Mine Fires and Underground Combustion decided to instruct a small group of experts to investigate the design of self-rescuers in order to agree on and promote the best technical characteristics.

This committee of experts was formed and met for the first time at the rescue centre at Essen-Kray on 26 November 1974.

In the light of experience acquired in the last 25 years, not only in certain Community countries where self-rescuers must be carried but also in certain Eastern countries, the committee of experts will advise on the criteria to be met by the apparatus, especially resistance to breathing, temperature of inhaled air and period of protection afforded. Particular stress will be laid on the use and limitations of these devices.

Maintenance, frequency of replacement and training in the use and maintenance of self-rescuers, will be considered as well as their design and quality control.

Emphasis will be placed on the practical aspects of the problems arising, so that a report can be submitted to the Mines Safety and Health Commission in 1975.

1) Doc. 3740/74,

2.1.7. Progress of other work required by the terms of reference of the Working Party

At its meetings on 18 March, 21 May and 14 October 1974, the Working Party acted as follows in carrying out its remit (see Annex III):

- 2.1.7.1. it continued the exchange of information on fires and underground combustion (Articles A 1 and 3 of the terms of reference): a conveyor fire in November 1973 at the Fr. THYSSEN mine in Germany, spontaneous combustion at the Ewald-Fortsetzung mine which was successfully controlled by equalization of pressure, rescue of three miners trapped underground in the RADBOD mine;
- 2.1.7.2. it followed the progress of current research in the following fields:
 - 2.1.7.2.1. research into roadway fires at the TREMONIA mine in Dortmund
smoke backflow in the experimental gallery which basically depends not on the size of the burning object but on the air velocity;
flammability of timber props coated with salts Ca Cl_2 or Mg Cl_2 ;
flammability of conveyor belts; comparison of the various reduced-scale tests or laboratory tests (see Chapter 2.1.3.);
 - 2.1.7.2.2. early detection of incipient spontaneous combustion and mine fires in the United Kingdom (Doc. 1379/74, 1923/74 Documents by Dr E. CHAMBERLAIN¹);
 - 2.1.7.2.3. research by CERCHAR into factors governing spontaneous combustion and the gases involved (Doc. 1772/74 by Mr ROGEZ¹); on 14 October 1974 the Working Party visited the laboratories at Verneuil where the work is carried out;
 - 2.1.7.2.4. fireproof clothing for rescue workers;
 - 2.1.7.2.5. rescue of trapped miners by means of large-diameter boreholes.

The 10th and 11th Reports contained an account of progress made in the last two fields; this account will be updated in the next Report.

1) Available from the Secretariat of the Mines Safety and Health Commission in English, French and German.

2.2. CHAPTER B. "WINDING ENGINES, WINCHES, ROPES AND SHAFT GUIDES"

- 2.2.1. The Working Party met on 1 October and 13 December 1974.
- 2.2.2. As mentioned in 1.2.3.1.13., the terms of reference of the Working Party were extended at the meeting of the Mines Safety and Health Commission on 22 January 1974 to include winding engines and winches in order to cover winding accidents resulting from defects in winding engines, and in particular that at MARKHAM COLLIERY in the United Kingdom.
- 2.2.3. This accident occurred on 30 July 1973 and resulted in the death of 18 miners and serious injury to 11 others. The Working Party took note of the accident at its meeting on 13 September 1973. On 1 October 1974 it studied the circumstances and causes of this accident as set out in the official report by Mr CALDER, H.M. Chief Inspector of Mines and Quarries, dated April 1974, following the Public Inquiry over which he presided.

A cage containing 29 workers crashed into the pit bottom at a depth of 400 m. The conclusions of the official report are that the disaster was caused by the complete failure of the mechanical brake of the winding engine because the spring nest centre rod, which was a "single line" component, broke. Repeated exposure of the rod to bending forces as a result of a design error caused cracks to develop, one of which propagated until failure occurred. These cracks might have been detected by the magnetic particle method of non-destructive testing.

Immediate action was taken by the N.C.B.: the centre rods in all spring nests similar to that involved in the accident were replaced, non-destructive tests were carried out on winding engine brake components and all winding apparatus was examined in order to identify all "single line" components and to assess stresses in brake components.

A committee of engineers was also formed to study all safety aspects of shafts, and four sub-committees, with 15 study groups, were set up to consider the mechanical, electrical, maintenance and metallurgical aspects.

1) Doc. 1433/74, available from the Secretariat of the Mines Safety and Health Commission in English, French and German.

Mr CALDER's conclusions and recommendations are set out in Doc. 1433/74. The essential points are as follows:

- examination and modification as necessary of all winding engines, for "single line" components;
- non-destructive testing at appropriate intervals of all brake components;
- design analysis of all winding engine brake components.

When this report was studied by the Working Party on 1 October 1974, it was decided that a small group of experts should be set up to keep in touch with the British committee of engineers and its study groups and to ensure that its results are studied at Community level as work progresses.

2.2.4. In connection with winding accidents, the Working Party examined the following three reports on 1 October and 13 December 1974:

1. Summary of current techniques in shaft winding and rope haulage with special reference to the design of winding engines (Mr H. ARNOLD, Head of the Seilprüfstelle in Bochum).
2. The safety requirements for brakes on winding engines and winches in the shaft winding plant of the German mining industry (Mr G. HAUSLER, Seilprüfstelle in Bochum).
3. Shaft winding and safety (Dr. HOISCHEM, Oberhausen-Sterkrade).

These three documents are available from the Secretariat of the Mines Safety and Health Commission in English, French and German.

The summaries below have been inserted in the 12th Report at the request of the Mines Safety and Health Commission on 20 March 1975 in order to bring the reports to the attention of interested parties.

The first document, No 2883/74, (9 pages of text and 53 illustrations) reviews developments in winding over the last decade. In Europe and particularly in the Federal Republic of Germany the trend is towards two-compartment winding, two-rope drum winders and 6, 8 10 and even 12-rope KOEPE type winding engines in order to meet the requirements of high-capacity central shaft systems at great depths. This implies increasingly large payloads of 15 to 40 tonnes as the maximum winding speed (as laid down in the Federal Republic) is 20 m/sec.

A planning diagram shows the relationship between the payload, the number of winding cycles, the theoretical hourly winding capacity and the rating of electrical winding engines, which, for DC engines may now be as high as 8 000 Kw.

The document also describes progress made with rope haulage in roadways, overhead monorails and ground-mounted rail transport.

The report compares the service life of ropes used for these purposes (2 to 6 months) with that of ropes in main shafts (1 to 3 years) and attributes the rapid deterioration of haulage ropes to the particularly heavy loads resulting from roadway curves, high contact pressures between roller and rope, and irregular running with slack rope.

Doc. 3254/74 (13 pages of text and 42 illustrations) lists and explains the main safety requirements for winding engine brakes on the basis of the current mining regulations in the Federal Republic of Germany for the types of brake used in Germany for winding engines and haulage winches. Diagrams illustrate the design and mode of operation of the various types of braking device, especially the fast-action, pneumatically controlled brake, which is most commonly used in winding engines in German mines.

The author draws attention to the new electro-hydraulically controlled disc brakes and summarizes the most important safety requirements for the mechanical construction and control system of these brakes in 17 points.

The report mentions only the types of brake used in West Germany. Doc. 4046/74 includes the following summary:

"The safety factors of those mechanical components of shaft winding systems to which I have deliberately restricted my remarks are quite stringent as compared with other fields of technology. However, a high degree of safety is frequently only apparently achieved as the safety factors for most components are only calculated on the basis of static loads. Owing to the high winding speeds and vast masses in motion, additional dynamic stresses play a vital part and are usually responsible for any damage occurring.

dering These safety factors based on static loads thus represent a certain danger as they obscure the fact that the degree of safety depends on the allowance made for additional dynamic loads and pulsating and alternating stresses. The interplay between the various components is so great that considering the safety of any one component in isolation cannot lead to satisfactory results. The principle which always applies in technology, that all components of a system should offer the same degree of safety if at all possible, is most difficult to implement with shaft winding systems owing to the diversity of this interplay. Shaft guides are of basic importance for the safety of the entire system; if of defective design, they transmit extremely high additional stresses to almost all the other components.

I have not been able to present any ready-made solutions to improving the safety of shaft winding installations. I trust, however, that my illustration of the various relationships in play will contribute to the continuing search for the safety and efficiency which all of us desire."

2.2.5. In this same connection, the Working Party on 13 December 1974 took note of a draft request for financial aid from the Commission of the European Communities submitted by the Seilprüfstelle in Bochum for the following project:

"An examination of the operation and safety of brakes on winding engines and winches - development of a method of diagnosis".

This document will be discussed when it is been translated in 1975 and a recommendation will then be made to the Mines Safety and Health Commission on the desirability of its proposing a research project to the Commission pursuant to Article 5 of its terms of reference.

2.2.6. The Working Party was also informed by Mr ARNOLD, the director of the Seilprüfstelle, of the latest progress and research findings concerning the discard dates for winding ropes subject to high stresses. This information is given in doc. 4044/74, which is available from the Secretariat of the Mines Safety and Health Commission in English, French and German.

2.2.7. The Working Party continued with the drafting of a report on standard safety requirements for winding and balance rope suspension gear, on which work had been in progress since 1969. A sub-committee of three British, French and German experts was formed to produce a final draft.

2.3. CHAPTER C - ELECTRIFICATION

The Working Party held five plenary meetings, on 10 January, 4 July, 14 and 31 October and 6 December 1974.

On 10 January 1974, the Working Party decided that priority should be given to its new remit relating to the standardization of regulations for the design, certification, installation and use of electrical equipment (see Annex III) in order to promote trade in equipment and automation systems. Such free trade in equipment is also the aim of a Council directive for electrical apparatus in other sectors of industry. Most of the other items in the general terms of reference of the Working Party will be considered as appropriate, as part of the work on standardization. This proposal was approved by the Mines Safety and Health Commission on 3 May 1974 and the composition of the Working Party modified to take account of its new responsibilities by the appointment of members from the test centres.

The four other meetings were concerned with sections 1 and 2 of Article 9 of the terms of reference. A start was made on modifying the "Proposal for a Council Directive on the approximation of the laws of the Member States concerning electrical equipment for use in potentially explosive atmospheres" - Doc. R/1387/74 (ECO 174) - to take account of conditions in mines where firedamp may be expected.

In addition, the Working Party considered the answers to be given to four questions submitted to the Mines Safety and Health Commission by CENELEC in connection with the draft European Standards EN 500/4 - General Requirements. Proposals were made to the Mines Safety and Health Commission with regard to the maximum surface temperature, the use of oil-filled switching and isolating devices, and locking by padlock of the apparatus for cutting off power. All these questions relate to electrical equipment for use in mines at risk from firedamp (Group I).

The Mines Safety and Health Commission finalized the answers to these questions, which are appended to this Report.

The fourth question concerns the use of light alloys in the manufacture of enclosures for electrical equipment. As the Working Party is not competent to give an opinion on this question, it was referred by the Mines Safety and Health Commission to an ad hoc committee.

2.4. CHAPTER D - FLAMMABLE DUSTS

2.4.1. The Working Party met on 27 and 28 June in Dortmund and on 18 and 19 November 1974 in Saarbrücken.

2.4.2. The three reports drawn up by the Working Party in 1973 were approved by the Mines Safety and Health Commission in 1974 and appended to the 11th Report to ensure more rapid distribution. The reports in question are:

- information report on procedures for neutralizing dust using salt pastes, powders and flakes, adopted on 22 January 1974 (Annex VI to the 11th Report)
- information report on water barriers for containing dust explosions underground, adopted on 22 January 1974 (Annex VII to the 11th Report)
- report on triggered barriers and recommendation for their use underground, adopted on 3 May 1974 (Annex VIII to the 11th Report).

2.4.3. The main purpose of the visits by the Working Party to installations in Germany was to observe how the techniques described in these reports were used in practice, and to bring themselves up to date on the progress of current research in this field.

2.4.3.1. At the Dortmund-Derne experimental gallery the Working Party was informed of studies of a fundamental nature on the behaviour of coal dust in the event of an explosion (described in the 17-page document 2884/74¹), and with the results of research into the prevention and suppression of explosions, as described in document 2620/74¹). The Working Party observed several experimental coal-dust explosions in the 200 m gallery at various explosion velocities and their containment by means of triggered barriers using different suppressant materials.

Work has also begun on the problem of coal-dust explosions in air containing a small amount of firedamp. This questions will be studied in 1975 in collaboration with the Working Party on Ventilation and Firedamp (see Chapter 2.8., section 2.8.3.2. and 2.8.3.5.).

1) Available in English, French and German from the Secretariat of the Mines Safety and Health Commission.

2.4.3.2. At the TREMONIA experimental mine in Dortmund, the Working Party observed experiments in the suppression of coal-dust explosions by means of the British Mark II triggered water barrier which weighs 750 kg. The explosion velocities were 80 m/sec and 400 m/sec using pure coal-dust and methane/coal-dust mixtures. An infra-red sensor was employed and the time required to trigger the barrier varied between 200 and 500 milliseconds. The time required to disperse the water was 200 to 300 milliseconds.

2.4.3.3. On 18 November 1974 the Working Party visited the Götteleborn mine where a TREMONIA-type triggered barrier was installed for testing under realistic underground conditions as recommended by the Mines Safety and Health Commission on 3 May 1974. The barrier consists of a thermo-electric sensor, an amplifier, and water troughs of 80 litres capacity located between 50 and 200 meters from the sensor.

A safety net of wire mesh protects personnel in the event of accidental discharge.

The special conditions imposed by the mining authorities were shown to be adequate and no particular difficulties emerged with regard to maintenance, shifting of the equipment or supervision.

On 19 November 1974 the Working Party visited a high-output face (4000 tonnes net/day) at the Ensdorf mine. Its members were particularly interested in dust control measures: salt pastes in the gateroads, deephole water infusion from the roadways, coal face infusion and water sprays in the vicinity of the shearer loader, at the discharge points of the conveyors and on the powered supports.

2.5. CHAPTER E - JOINT ACCIDENT STATISTICS

2.5.1. The Working Party did not meet.

2.5.2. The study commissioned from an expert and mentioned in Chapter 2.5.2. of the 11th Report was received by the Secretariat and translated. It has been sent to members of the Working Party for study.

The following documents relate to this report:

- Practical application of the laws of chance to the interpretation of raw statistical data (document 619/74 - 15 pages, 6 graphs);
- Application of mathematical statistics to accident prevention (Document 716/74 - 24 pages);
- Interpretation of accident statistics in the Community of Six and the United Kingdom by the method set out in the Documents Nos. 619/74 and 716/74 (Doc. 717/74 - 17 pages, 10 pages of annexes and 8 graphs).

2.5.3. On 10 October 1974 the Secretariat also discussed with German representatives the changes made in the method of recording underground accidents in the Federal Republic of Germany as a result of the new law affecting all industries, which will apply to mines with effect from 1 January 1975.

It is difficult to compare the statistics for the Community of Six with those of the United Kingdom. A study of these problems will begin in 1975.

2.6. CHAPTER F - HEALTH IN MINES

2.6.1. The Working Party met on three occasions, on 14 February, 20 May and 7 October 1974.

2.6.2. On 14 February 1974, the Working Party finalized and adopted the report by the group of experts on coal getting and heading machines - "Guidelines concerning the design and use of coal getting and heading machines relating to the reduction of airborne dust".

The report was adopted by the Mines Safety and Health Commission on 3 May 1974 and appended to the 11th Annual Report (Annex XI) to ensure early distribution. As stated in section 2.6.2. of the 11th Report, the guidelines are addressed to both manufacturers and users and cover the design, manufacture and operation of machines. Their purpose is to minimize the make of dust.

2.6.2.1. In response to a request by the Mines Safety and Health Commission, an annex to the above text has been provided, giving practical examples for ploughed faces. This document was adopted by the Working Party on 7 October, by the Mines Safety and Health Commission on 15 November 1974, and is appended as Annex VII.

2.6.2.2. At the same meeting, the Mines Safety and Health Commission extended section 1 of the terms of reference of the Working Party on Health in Mines to cover powered supports and underground crushers. This question was discussed on 20 May 1974 by the Working Party, which found that research was being conducted with financial assistance from the Commission into this problem of current interest, but no generally applicable solution was likely to be found in the short term. It was decided that a list should be drawn up of the various individual solutions to these problems. Work will continue along these lines in 1975.

2.6.3. At the meeting on 20 May, the other sections of the terms of reference were considered and the following decisions were taken:

2.6.3.1. Sections 2 and 3 (Annex III): a questionnaire will be distributed in order to determine and compare various methods of respirable dust measurement, and the airborne dust concentration limits currently specified in the various Member States.

The replies to this questionnaire were discussed on 7 October. After editing, they may be distributed for information, but no progress can be made in harmonization until valid comparisons are available between the various measuring devices used in the different countries. A research programme for the purpose will be carried out in 1975 with financial assistance from the Community in order to obtain the comparative data required.

2.6.3.2. Section 4 a of the terms of reference: the Working Party began work on 7 October 1975 on problems relating to mine climate, noise and lighting.

One of the documents considered on this occasion is available in Dutch, English, French and German viz. document No 3084/74 "Work at high temperatures" (permissible temperature limits, research project by the Coördinatiecentrum Reddingswezen in Hasselt and the Institut Provincial MALVAUX at Liège).

Work will continue in 1975, with the object of at least disseminating information on the progress made in combatting these hazards individually. The cumulative effect of a number of these hazards will be considered at a later date.

2.7. CHAPTER G - PSYCHOLOGICAL AND SOCIOLOGICAL FACTORS AFFECTING SAFETY

2.7.1. Although the Working Party did not meet in 1974 Community safety campaigns and conferences for trade unionists are its responsibility as their purpose is the education of both workers and management.

2.7.2. Community safety campaigns on the following subjects were continued in the French, German and Belgian coal fields:

- in France : training in mechanical handling and the prevention of accidents in mine field
- in Germany : preparation of campaigns on the control of respirable dust; completion of the campaign on "conveyors" in the Ruhr;
- in Campine: listing the risks involved in each operation in driving roadways and possible countermeasures.

In 1974 the Commission contributed a total of Bfrs. 1 500 000 towards these campaigns.

The final reports on the campaigns will be discussed by the Working Party in 1975.

2.7.3. Conference for trade unionists at Haltern (Germany) on 25, 26 and 27 November 1974.

A brief account of this conference, mentioned earlier in Chapter 1 1.2.4., is given below.

It was the 8th meeting of its kind since 1968 which, organized with the collaboration of the Secretariat of the Mines Safety and Health Commission receives financial assistance from its budget.

2.7.3.1. Papers read on the first day:

- General survey of coal mining in the Federal Republic of Germany, by Mr F.C. ERASMUS, managing director of Ruhrkohle A.G.

This paper has been produced as document 3741/74 and has been translated into French and English. It takes an optimistic view of the prospects in the coal industry; present production will be maintained and will give rise to the problem of recruiting and training 10 to 15 thousand workers per year. This level of recruitment presupposes security of employment, a fair level of remuneration and improved working conditions.

- 3 papers on mines safety in the Federal Republic of Germany:

- the first paper, presenting the point of view of the Mining Inspectorate, was read by Mr A. COENDERS, Director of the Landesoberbergamt of North Rhine-Westphalis in Dortmund.

The paper, produced as Document 3652/74, shows how the Inspectorate studies safety and health problems in light of present operating conditions which are marked by increasing difficulty in controlling firedamp emission and climatic conditions, increased rock pressures, and the severe problem of dust and noise.

- the second paper, by Mr. H. KEGEL (an executive of Ruhrkohle AG) gives the management point of view.

It analyses the safety aspects of the Ruhrkohle operating programme and the activities of the workers' representatives (Doc. 4041/74).

- the third paper, presenting the point of view of the IG-Bergbau und Energie, was read by Mr H. ALKER, a member of the central committee of the IG-Bergbau und Energie.

The paper reviews safety trends for the periods 1830 - 1890, 1890 - 1958, 1958 - 1972 and developments in the field of silicosis between 1929 and 1973. It also gives an account of the development in Germany of the mining inspectorate and of institutions and laws intended to ensure the safety and health of miners.

2.7.3.3. On the second day of the conference parties visited the following

- underground workings in the Gneisenau mine,
- TREMONIA experimental mine,
- Minister Stein centre for training in the use of mining machinery.

2.7.3.4. The third day was devoted to discussion. Among the points raised were recognition of emphysematous bronchitis as an occupational illness (the Mines Safety and Health Commission is not competent in this matter), the importance of safety measures in the planning of operations, the high temperatures to which workers are now being exposed, new sources of dust connected with powered supports and underground crushers, and the role played by workers' representatives in accident investigation through the colliery safety and hygiene committees.

These points were answered by the German representatives of the Mines Safety and Health Commission and the Secretary, who summed up the conference after the German experts serving on the working parties had given 6 brief reports on work currently in progress on standards for conveyor belts and fire-resistant fluids, cooperation of rescue centres and pooling of equipment, conditions to be imposed by the mines authorities when the CH₄ limits are exceeded, dust measurement and accident statistics.

2.8. CHAPTER H - VENTILATION AND FIREDAMP

2.8.1. The Working Party held four plenary meetings in Luxembourg on 18 January, 31 May, 9 September and 13 December 1974.

2.8.2. On 31 May, the Working Party finished drafting the document "Conditions under which exemption might be granted to raise maximum permitted CH₄ limits".

This document was adopted by the Mines Safety and Health Commission on 15 November 1974 and is printed as Annex V.

As mentioned in Chapter 2.8.3. of the 11th Report, this document is addressed to the mining authorities and is intended to serve as a model for the minimal conditions which must be satisfied before exemption from the firedamp limits specified in national regulations can be contemplated. These conditions must maintain a level of safety at least equivalent to that achieved by existing regulations. They were arrived at by comparing the conditions imposed in the various countries and experience of their application.

This study is covered by Doc. 953/4/73 "Situation in the various Member States of the European Community with regard to exemptions from the statutory CH₄ limits".

This working document is not appended, but is available from the Secretariat of the Mines Safety and Health Commission in English, French and German.

2.8.3. The Working Party studied the following subjects, in its terms of reference.

2.8.3.1. Use of methanometers; the report will be completed in 1975.

2.8.3.2. Effect of firedamp on the explosibility of coal dust.

The Working Party studied a document on this subject by the Westfälische

Berggewerkschaftskasse (Doc. 1627/74 - 34 pages, 16 illustrations¹⁾), and watched tests in the experimental gallery of the same organization in Dortmund-Derne on 18 June 1974.

A document by the S.M.R.E. on the same subject (Document 431/75 - 3 pages) was submitted on 13 December 1974.

In 1975, the Working Party will continue its studies of this question in collaboration with the Working Party on Flammable Dusts.

2.3.3.3. Ignition of firedamp below armoured conveyors.

Work on the subject on 9 September 1974 when documents drawing attention to this danger were submitted to the Working Party by the British delegation (Doc. 2304/74 - 8 pages¹⁾) and the German delegation (Doc. 2305/74 - 13 pages¹⁾). A film illustrating the experiments conducted at the TREMONIA experimental mine was discussed.

On 13 December 1974 three further relevant documents were studied: a report by the Saarbergwerke AG (Doc. 2993/74¹⁾), a decision by the Oberbergamt for the Saar and Rhenish Palatinate (Doc. 2999/74¹⁾) and a circular from the Oberbergamt for North Rhine-Westphalia (Doc. 3000/74¹⁾).

The Working Party proposed to the Mines Safety and Health Commission that a series of systematic measurements of methane concentrations below armoured conveyors be carried out in all coal-producing countries of the Community. The Mines Safety and Health Commission approved this proposal on 15 November 1974 and the campaign of measurements began immediately. The results will be analysed in 1975.

2.3.3.4. Use of Diesel engines in mines: problem of exhaust gases and of protection against explosion and fire.

The Working Party began work on this question on 13 December, when it took note of a number of documents submitted by the Netherlands and German delegations. Additional contributions will be made by the other delegations.

1) Available from the Secretariat of the Mines Safety and Health Commission in English, French and German

2.8.3.5. During a visit arranged for 18 and 19 June 1974, the Working Party observed and discussed the following practical applications of the work done in the above fields:

- Dortmund-Derne experimental gallery: experiments in exploding hybrid mixtures (as mentioned above in doc. 1627/74)
- Prüfstelle für Grubenbewetterung in Bochum: device for early detection of fires, ventilation measuring devices and detectors, and early detection of gas outbursts

These two institutes belong to the Westfälische Berggewerkschaftskasse in Bochum. An account of the research described above is available in English, French and German from the Secretariat.

- Friedrich Heinrich mine in Kamp-Lintfort: the Working Party visited a high-output face using shield supports and a drum shearer, and had an opportunity to inspect the following devices: remote monitoring apparatus measuring CH₄ and CO levels and air velocities; slits in the bottom race of armoured conveyors to avoid firedamp accumulations in the lower compartment and continuous automatic monitoring of firedamp concentrations in this location.

2.9. CHAPTER I - MECHANIZATION

2.9.1. The Working Party met in Luxembourg on 8 March and 3 July 1974 and in Walsum (Germany) on 16 and 17 December 1974.

2.9.2. It analysed the very full documentation built up in 1973 on the following subjects:

- lessons derived from haulage and transport accidents at the coal face in the United Kingdom (Doc. 1155/73 - 17 pages¹) and technical measures to be applied in the mechanization of winning operations in Germany on the basis of a representative sample of accidents (Doc. 1154/73 - 10 pages¹);
- the statutory provisions governing mechanization in each country; as these regulations represent such a volume of material only the contents pages could be translated.

2.9.3. The Working Party then asked each delegation to carry out more specialised studies on topics to which special attention had been paid in their respective countries.

2.9.3.1. Reports were submitted from the British delegation (Document 2373/74 - 10 pages¹) and the French delegation (Document 2615/74 - 4 pages¹) on methods of studying and recording accidents occurring in connection with mechanization and transport at the face.

On the basis of these studies, the delegations drew up recommendations for the design of shearers (doc. 2616/74 - 5 pages¹), submitted by the French delegation), instructions to be issued to the personnel and design and operating requirements for winning machines (doc. 1629/74 - 8 pages, submitted by the Belgian delegation and docs 1926/74 and 2215/74 - 18 and 19 pages respectively¹), submitted by the German delegation).

The Working Party paid particular attention to haulage chains; which are being taken out in some countries.

1) Available from the Secretariat of the Mines Safety and Health Commission in English, French and German

- 2.9.3.2. A large number of documents related to haulage chains were studied,
- Documents submitted by the Netherlands delegations:

A study of plough chains and testing of such chains especially by the electromagnetic method: Doc. 1930/74 - 5 pages, 2 graphs¹⁾; limitation of the electrical traction in coal-winning machines: Doc. 2214/74 - 2 pages, 3 diagrams¹⁾;

- Documents submitted by the British delegation:

Notes for guidance on methods of measurement, frequency of examination, and discard procedure for power loaders haulage chain (doc. 2669/74 - 6 pages, 4 graphs¹⁾), provision of haulage chain guards on power loaders (doc. 2670/74 - 3 pages¹⁾), load limitation in power loader haulage chains (doc. 2671/74, 12 pages, 17 annexes¹⁾), crack detection (doc. 2672/74 - 2 pages¹⁾).

- 2.9.4. During its tour of the Walsum mine on 17 December 1974, the Working Party visited a high-output face equipped with a double-drum shearer-loader, shield supports, and a chain conveyor using a single 34 mm chain.

The Working Party hopes to submit a first report to the Mines Safety and Health Commission in 1975.

2.10. CHAPTER J - STRATA CONTROL

2.10.1. The Working Party met in Luxembourg on 13 September 1974.

2.10.2. It considered a paper submitted by the British delegation, describing a method of driving roadways at longwall faces which had proved effective in reducing accidents in the South Midlands area, where no serious accidents have occurred since 1973 as a result of roof falls during roadway drivage in 15 mines with an annual output of 8 million tonnes.

This method of roadway formation does not use explosives; the roof is normally cut by the shearer loader so that the area of roof exposed is reduced to the minimum, the face and roadhead are "in line" and there is no break in the support system for the face and gate. The Working Party will visit these mines in 1975.

Document 2751/74 (13 pages and 34 diagrams¹) is available in English, French and German.

2.10.3. The Working Party also studied a report on progress in research carried out in the Federal Republic of Germany into roadway maintenance, as affected by rock pressures, driving and support techniques (Doc. 2753/74 - 8 pages¹).

Special mention should be made of the models constructed to estimate the rock pressures to be expected during drivage in stone and coal as affected by the position of the roads in relation to workings at a lower or higher level or at the same level. Other important aspects are mechanized drivage and the benefits from the point of view of convergence of in-line roadhead systems.

2.10.4. The Working Party began study of a rock burst at the Sachsen mine on 28 June 1974 (4 dead and 3 injured). The accident occurred in a face where winning operations were about to begin, at a depth of 1 000 m and in a seam 5 to 6 m thick. Initially, an upper layer 3 m thick was to be won. The rock burst occurred during drilling of a second stress relieving hole in order to reduce rock pressures which had been evident for three days.

1) Document available from the Secretariat of the Mines Safety and Health Commission in English, French and German

The decision to drill relieving holes had been reached by the mining authorities after an earlier rock burst had occurred in this same district on 8 August 1973, causing eight fatalities.

Research into rock bursts has been intensified and the Working Party will continue studies of this question in 1975.

- 2.10.5. The Working Party also studied the accident which occurred at Seafield colliery (Scotland) on 10 May 1973, and resulted in the deaths of five men and serious injury to four others.

This accident will be further studied in 1975 when the findings of a British committee on powered supports for use on steep faces are available.

- 2.10.6. The Working Party also considered two films made in France on "The life of a face" and "The life of a roadway", which are available in English, French and German.

2.11. CHAPTER K - EFFECTS ON SAFETY OF HOURS WORKED, WITH PARTICULAR REFERENCE
TO DIFFICULT AND DIRTY WORKINGS

The remit of this Working Party conferred by the Mines Safety and Health Commission on 22 June 1973 is under reexamination in the light of more recent sociological studies.

3. SECTION III

STUDIES OF GROUP ACCIDENTS

These accidents are listed in Chapter 1.2.2.

The conclusions reached on the accidents which occurred in 1973 in the United Kingdom were stated on pages 22 and 25 of the 11th Report.

No conclusions have yet been reached on the other accidents.

Initial discussions of the disaster which occurred on 27 December 1974 in No 3 Mine of the Lens complex at Liévin were to be held by the Restricted Committee and the Mines Safety and Health Commission on 10 January 1975 and 20 March 1975 respectively.

4. SECTION IV

JOINT ACCIDENT STATISTICS

4.1. Annex I contains tables 1a) and 1b), which give absolute figures and frequency rates (per million hours) for fatalities and injuries for 1973 according to the 12 "technical" causes and 4 accident locations. Tables 2a) and 2b), which give a similar information concerning fatalities and injuries in accordance with the severity and locality of the injuries. These tables cover Belgium, the Netherlands, Italy, the Federal Republic of Germany with separate tables for each coal field (in Germany and France). A summary has been made for these countries for tables 1a) and 1b), but not for 2a) and 2b) as it was not possible for Belgium to provide the necessary details.

For the United Kingdom, tables 1a) and 1b), 2a) and 2b) have been drawn up on an experimental basis but only for fatalities and "serious injuries".

4.2. The results for the United Kingdom and the Community of Six can only be partially compared with reservations for the following reasons:

4.2.1. United Kingdom injury figures cannot be incorporated in their present form in the tables used by the Mines Safety and Health Commission. Records are kept for all accidents giving rise to more than three days' incapacity whereas for the community of Six, the records are for at least 4 days of incapacity and under different headings.

4.2.2. Different criteria are used to define the term "serious" accidents: in the United Kingdom it means those which result in serious fractures or amputations and other injuries which might endanger life or lead to permanent incapacity, while in the Community of Six, it means accidents causing temporary incapacity of more than 56 days. These accident rates are not comparable in their present form. The study mentioned in 2.5.2. will attempt to deal with this matter.

4.2.3. Fatal accidents mean those resulting in death within 52 weeks after the accident in the United Kingdom, and within 56 calendar days in the Community of Six. In spite of this difference, rates for these accidents are generally comparable.

4.3. As in earlier years, the tables in this chapter include a chronological comparison of serious and fatal accidents since 1968 for the Community of Six. These figures are given in tables A, B, and C (collective accidents) and D, which summarizes the important factors. The lower section of the latter table gives the corresponding figures for the United Kingdom in 1973.

A summary of the frequency rates of all accidents in 1973 in the Community of Six is also given with these tables (1b), 2b)) and tables 1b) and 2b) for the United Kingdom, but for fatalities and "serious injuries" only.

4.4. As has been mentioned, the only comparison which can properly be made without further investigation is that of fatal accidents. In 1974 there were 37 fatalities in the United Kingdom, representing a rate of 0.138 per million man-hours, and 143 fatalities (a rate of 0,456 per mio/h) in the Community of Six. For the purposes of statistical comparison, it is preferable to deduct fatalities resulting from collective accidents (0 in the United Kingdom and 47 in the Community of Six), after which the rates are 0.138 and 0.307 respectively. Here too the rate for the United Kingdom is considerably lower than the Community rate.

4.5. Returning to the chronological analysis of serious and fatal accidents in the Community of Six, the same reservations apply as in earlier years. The rates cannot be compared as such and a certain margin or confidence interval should be allowed.

Summarising the tendencies which can be observed from table D.

The number of fatalities for the Community of Six. per million man-hours, rose from 0.413 to 0.456, an increase of 10.4 %. Disregarding collective accidents, these rates are 0.336 and 0.307 respectively, which represents a significant decrease of 21 %.

For the United Kingdom the fatality rate fell from 0.242 to 0.138 per mio/h, a decrease of 43 %. Disregarding collective accidents these rates are 0.111 and 0.138 per mio/h respectively, an increase of 24 %.

For the Community of Nine there were 180 fatalities for 581 million man-hours in 1974, a rate of 0.310, whilst in 1973 there were 211 fatalities for 638 million man-hours, a rate of 0.331.

The incidence of serious injuries in the Community of Six fell from 16.77 in 1973 to 16.12 in 1974, a significant decrease of 4 %. The decrease in serious injuries was marked as regards accidents involving falls of ground and haulage and transport, as may be seen in Table A below.

4.6. As previously stated, a chronological analysis of other accidents can only be made for the former Community of Six and only for a period of three years, which is too short a time to yield a statistically valid interpretation of the changes observed.

Repeating these reservations, and by way of illustration (see Tables 1a) and 1b)), it should be mentioned that:

- the number of casualties resulting in an absence from work of 21 - 36 days (17 325 in 1973) fell to 15 875, representing a significant fall of 3 % in the rate, from 52.26 to 50.62 per mio/h.
- the number of casualties resulting in an absence from work of 4 - 20 days (37 384 in 1973) fell to 34 797, representing a significant fall of 1.6 % in the rate, from 112.77 to 110.97 per mio/h.

It should be remembered, however, as regards this category of accidents, that the Working Party believes that the changes in these accident figures do not provide a reliable reflection of changes in safety standards.

4.7. In the same way as last year, Table 1 a) gives a breakdown of accidents in the first five categories of "technical causes" for the Community of Six and the United Kingdom. For the United Kingdom, the only division is into "serious injuries" and "fatalities".

Fatalities, 65 % of which were accounted for by accidents in these five categories in 1974 as opposed to 74.2 % in 1973, are obviously heavily affected by the collective accident at Liévin, which does not come under headings I to V and which caused 42 deaths.

However, headings I - V account for almost all injuries in 1974, and sizeable variations were noted in each of these headings, except for serious injuries in the United Kingdom under headings I and II.

1974	Community (Six)					United Kingdom		
	4 to 20 days %	21 to 56 days %	> 56 days %	Fatalities %	Total	Serious %	Fatalities %	Total %
I Falls of ground	31,5	26,6	25,7	24,5	29,5	19,2	35,1	20,5
II Haulage and transport	4,8	6,5	11,0	17,5	6,0	44,1	29,7	43,0
III Falls by accident victim	22,1	26,2	24,1	10,5	23,4	13,4	5,4	12,3
IV Machinery, tools etc.	15,4	15,3	12,3	4,2	15,1	15,3	21,0	15,9
V Falling objects	22,2	22,4	22,5	3,4	22,2	2,4	2,7	2,4
Total I to V	95,9	97,0	96,4	65,0	96,2	94,5	94,6	94,5

4.3. To sum up, it is apparent that within the former Community of Six the number of casualties resulting in an absence from work of more than three days has decreased. The fatality rate would also have fallen but for the 1974 collective accident at Liévin. In the United Kingdom, however, the bad year for collective accidents was 1973, and there is no significant change in the number of serious injuries.

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A. Comparative Table of numbers of persons incapacitated
by underground accidents for eight weeks or longer
years 1958-1973 per '000,000 man-hours (frequency)

GERMANY	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977
1) Falls of ground	4,843	4,779	4,886	4,797	4,682	4,663	4,894	4,732	4,721	4,524	4,618	4,736	4,321	4,354	4,20	4,30	4,08			
2) Haulage and transport	2,550	2,569	2,445	2,458	2,501	2,433	2,385	2,411	2,067	1,913	1,994	2,195	2,007	1,724	1,81	1,80	1,68			
3) Movement of personnel	2,497	2,463	2,348	2,512	2,608	2,646	2,744	3,032	2,852	2,974	3,300	3,399	3,370	3,246	3,48	3,98	4,15			
4) Machinery, handling of tools and supports	0,767	0,914	0,920	0,867	1,046	1,213	1,242	1,234	1,244	1,124	1,396	1,291	1,382	1,597	1,38	1,61	1,58			
5) Falling objects	2,537	2,719	2,738	2,945	3,077	3,038	3,242	3,344	3,272	3,642	3,773	4,036	4,166	3,313	3,49	3,49	3,37			
6) Explosives	0,015	0,011	0,010	0,009	0,008	0,006	0,006	0,005	0,005	0,017	0,011	0,007	0,008	-	-	-	0,01			
7) Explosions of firedamp or coal dust	0,011	0,016	-	0,002	0,123	0,010	-	0,014	0,013	-	0,004	0,004	-	0,012	-	-	-			
8) Sudden outbursts of firedamp, suffocation by natural gases	-	-	-	-	-	-	-	0,005	-	0,003	-	-	-	-	-	-	-			
9) Underground combustion and fires	-	-	0,003	0,002	-	-	-	-	-	-	0,004	-	-	-	-	-	-			
10) Inrushes of water	0,004	-	-	-	-	0,004	-	-	-	-	-	-	-	-	-	-	-			
11) Electricity	0,010	0,014	0,012	0,014	0,006	0,012	0,009	0,002	0,010	0,006	0,011	0,026	0,012	0,008	0,01	0,005	-			
12) Other causes	0,487	0,522	0,457	0,503	0,488	0,473	0,477	0,354	0,414	0,396	0,429	0,402	0,532	0,632	0,96	0,99	0,52			
TOTAL	13,721	14,007	13,819	14,109	14,539	14,499	14,999	15,133	14,598	14,599	15,540	16,096	15,798	14,886	15,31	16,19	15,40			
BELGIUM	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977
1) Falls of ground	5,911	4,294	4,324	4,071	4,439	4,432	4,417	3,574	3,568	3,850	3,676	5,075	4,673	3,989	4,6	4,02	3,99			
2) Haulage and transport	4,132	2,979	2,709	2,770	3,331	3,565	3,419	2,866	3,269	2,960	3,220	3,169	3,018	3,365	2,8	3,33	2,43			
3) Movement of personnel	1,354	0,998	1,008	1,062	1,136	1,066	0,961	0,771	0,936	0,903	1,122	1,186	1,144	1,496	1,3	1,41	1,70			
4) Machinery, handling of tools and supports	2,804	2,085	2,386	2,097	2,461	2,414	2,310	2,126	2,146	2,265	1,903	2,353	1,801	2,469	1,7	2,58	2,18			
5) Falling objects	0,414	0,371	0,354	0,301	0,445	0,547	0,397	0,292	0,349	0,459	0,358	1,244	1,242	1,870	1,5	1,44	1,84			
6) Explosives	0,027	0,007	0,032	0,018	-	0,019	0,018	-	0,013	0,056	0,049	-	-	0,025	0,03	-	-			
7) Explosions of firedamp or coal dust	-	-	-	-	-	-	0,009	0,031	-	-	-	0,019	-	-	-	-	-			
8) Sudden outbursts of firedamp, suffocation by natural gases	0,011	-	-	-	-	-	-	-	0,013	-	-	-	-	-	-	-	-			
9) Underground combustion and fires	-	-	-	-	-	-	-	0,021	-	-	-	-	-	-	-	-	-			
10) Inrushes of water	-	-	-	-	0,010	-	-	-	-	-	-	-	-	0,025	-	-	-			
11) Electricity	0,011	-	0,016	0,018	0,010	0,009	-	0,010	0,015	-	0,016	0,019	-	-	-	0,03	0,03			
12) Other causes	0,260	0,255	0,260	0,301	0,351	0,198	0,268	0,333	0,362	0,278	0,228	0,175	0,195	0,324	0,2	0,36	0,41			
TOTAL	14,924	10,989	11,089	10,638	12,161	12,250	11,799	10,024	10,669	10,771	10,572	13,240	12,097	13,563	12,13	13,16	12,61			

A. Comparative Table of numbers of persons incapacitated
by underground accidents for eight weeks or longer
years 1958-1973 per '000,000 man-hours (frequency)

FRANCE *	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977
1) Falls of ground	5,027	4,665	4,744	4,416	4,222	4,177	4,308	3,941	3,927	3,634	4,162	4,044	3,761	3,721	3,79	4,38	4,52			
2) Haulage and transport	1,980	1,695	1,920	2,106	2,196	2,364	2,278	2,153	1,858	1,918	1,946	1,556	1,666	1,959	1,89	2,37	2,36			
3) Movement of personnel	1,505	1,118	2,873	2,334	2,458	2,368	2,383	2,087	2,239	2,174	2,815	3,226	3,372	3,667	4,51	4,79	4,11			
4) Machinery, handling of tools and supports	0,914	1,022	1,621	2,523	2,991	3,096	3,042	2,272	2,639	2,773	3,016	3,070	3,332	2,373	2,63	2,84	2,98			
5) Falling objects	1,890	2,187	1,893	2,292	2,073	2,278	2,074	1,839	1,785	2,114	2,386	2,537	2,515	4,566	4,96	5,00	5,12			
6) Explosives	0,043	0,051	0,031	0,017	0,051	0,009	0,013	0,037	0,010	0,011	-	0,050	0,016	-	0,02	-	-			
7) Explosions of firedamp or coal dust	0,047	0,088	-	-	0,004	-	-	-	0,029	-	-	-	0,087	-	-	-	0,08			
8) Sudden outbursts of firedamp, suffocation by natural gases	0,004	-	-	-	-	-	-	-	-	0,005	-	-	-	-	-	-	-			
9) Underground combustion and fires	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0,01	0,03			
10) Inrushes of water	-	-	-	-	-	-	0,018	-	0,005	-	0,006	-	0,032	-	0,01	0,04	-			
11) Electricity	0,014	-	0,004	0,029	0,004	0,014	0,009	0,014	-	0,005	0,006	0,014	0,024	0,009	0,01	-	9,01			
12) Other causes	2,956	2,768	0,793	0,362	0,240	0,354	0,227	0,174	0,200	0,185	0,233	0,291	0,294	0,314	0,43	0,67	0,63			
TOTAL	14,380	13,594	13,909	14,079	14,239	14,660	14,347	12,517	12,692	12,819	14,570	14,788	15,099	16,609	18,24	20,09	19,85			
ITALY	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977
1) Falls of ground	1,355	1,378	1,808	-	0,792	0,366	0,893	5,572	6,360	5,580	0,182	3,656	-	5,958	2,20	-	-			
2) Haulage and transport	1,335	0,984	1,205	0,676	1,847	1,465	1,787	-	0,707	0,797	0,812	-	-	3,404	-	-	-			
3) Movement of personnel	0,668	0,394	1,005	1,578	1,056	0,732	1,787	-	0,707	1,594	0,812	1,462	-	1,702	-	3,25	-			
4) Machinery, handling of tools and supports	1,169	0,984	0,603	0,902	1,584	1,465	3,127	7,164	7,067	13,552	7,304	8,043	6,896	2,553	-	-	-			
5) Falling objects	1,169	1,698	1,808	2,029	2,375	3,296	3,574	0,796	-	6,377	6,493	3,656	-	1,702	-	-	1,64			
6) Explosives	0,167	-	-	0,225	-	0,366	-	-	-	-	-	-	-	-	-	-	-			
7) Explosions of firedamp or coal dust	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
8) Sudden outburst of firedamp, suffocation by natural gases	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
9) Underground combustion and fires	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
10) Inrushes of water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
11) Electricity	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
12) Other causes	0,334	0,591	0,603	0,451	-	-	-	1,592	3,360	3,189	0,812	-	5,172	0,851	-	-	-			
TOTAL	6,197	6,299	7,032	5,861	7,654	7,690	11,168	15,124	18,201	31,089	17,043	16,817	12,068	16,170	2,20	3,25	1,64			

* Including Provence as from 1970.

A. Comparative Table of numbers of persons incapacitated
by underground accidents for eight weeks or longer
years 1958-1973 per '000,000 man-hours (frequency)

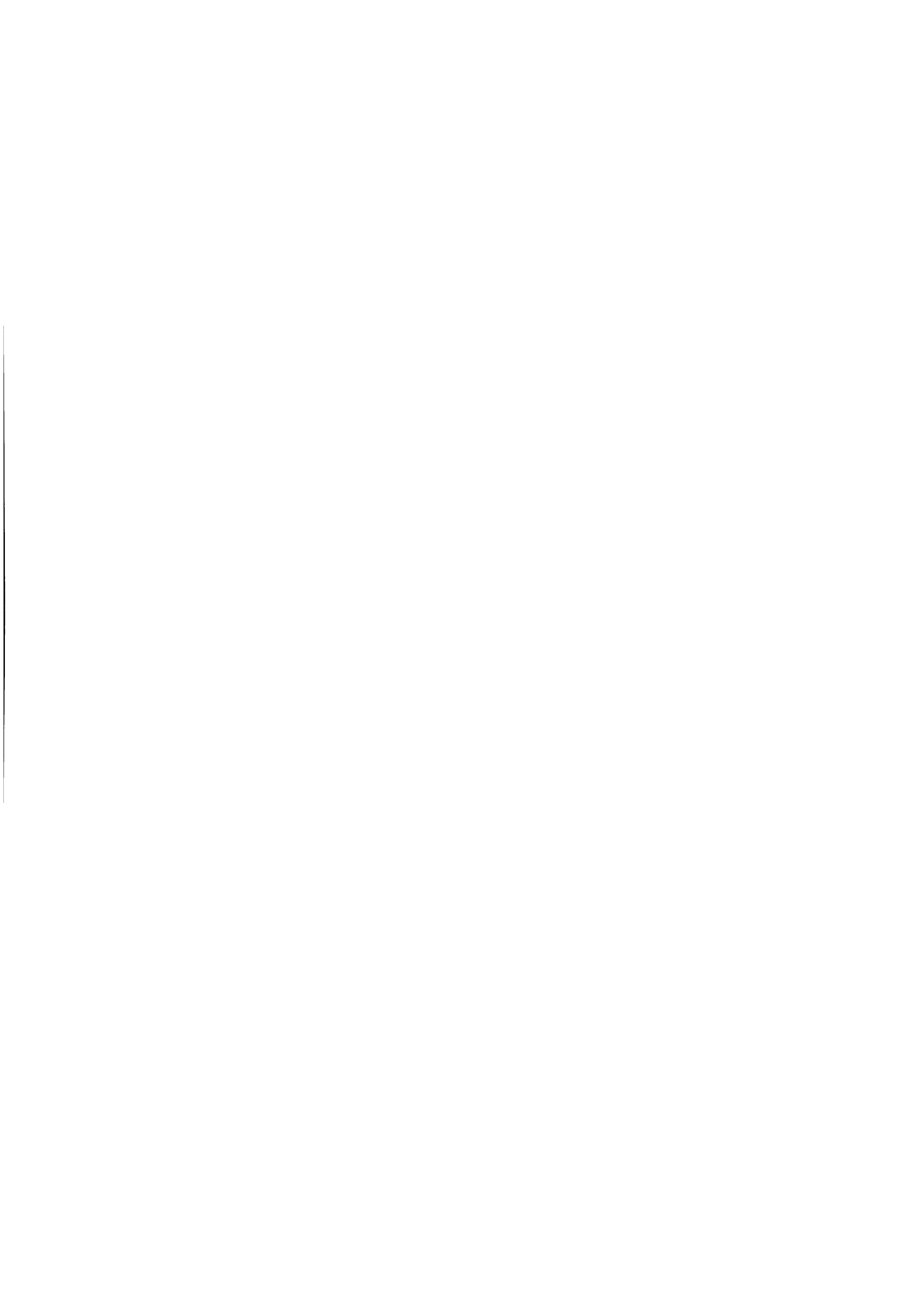
NETHERLANDS	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977
1) Falls of ground	1,326	1,464	1,305	1,829	2,238	1,742	2,017	1,923	1,688	2,466	2,450	2,737	2,634	2,528	2,06	4,219	1,041			
2) Haulage and transport	1,511	1,562	1,898	1,924	2,590	1,826	1,952	2,808	2,621	1,866	2,407	2,562	2,634	1,820	2,19	2,443	2,603			
3) Movement of personnel	0,324	0,386	0,187	0,514	0,580	0,630	0,472	0,774	0,605	0,766	1,160	1,165	0,905	0,404	1,03	0,888	0,521			
4) Machinery, handling of tools and supports	0,617	0,402	0,780	0,915	1,015	1,050	1,094	1,282	2,066	0,833	1,031	1,689	1,894	3,033	1,81	1,554	4,686			
5) Falling objects	0,401	0,515	0,492	0,819	0,642	0,630	0,923	0,862	0,958	0,866	1,590	1,106	0,659	1,213	1,55	0,888	1,562			
6) Explosives	-	-	-	-	-	-	0,021	-	-	-	-	-	-	-	-	-	-			
7) Explosions of firedamp or coal dust	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
8) Sudden outbursts of firedamp, suffocation by natural gases	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
9) Underground combustion and fires	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
10) Inrushes of water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
11) Electricity	-	-	-	-	0,021	-	0,021	-	-	-	-	-	-	-	-	-	-			
12) Other causes	0,262	0,161	0,390	0,210	0,497	0,147	0,129	0,088	0,353	0,700	0,301	0,116	0,165	0,202	0,52	0,666	-			
TOTAL	4,441	4,490	5,051	6,212	7,583	6,025	6,629	7,737	8,291	7,497	8,939	9,375	8,891	9,201	9,15	10,659	10,413			
COMMUNITY (IV)	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977
1) Falls of ground	4,846	4,490	4,571	4,434	4,387	4,337	4,509	4,215	4,186	4,060	4,261	4,492	4,135	4,109	4,08	4,29	4,15			
2) Haulage and transport	2,602	2,347	2,310	2,371	2,521	2,520	2,346	2,416	2,173	2,037	2,139	2,118	2,016	1,953	1,93	2,11	1,91			
3) Movement of personnel	2,003	1,823	2,185	2,185	2,282	2,261	2,326	2,364	2,320	2,354	2,795	3,023	3,084	3,117	3,47	3,88	3,89			
4) Machinery, handling of tools and supports	1,098	1,064	1,264	1,423	1,712	1,818	1,848	1,773	1,815	1,790	1,945	1,865	2,011	1,876	1,75	2,01	1,98			
5) Falling objects	1,962	2,161	2,105	2,353	2,375	2,406	2,442	2,415	2,362	2,638	2,858	3,185	3,308	3,506	3,62	3,63	3,62			
6) Explosives	0,023	0,020	0,017	0,012	0,018	0,010	0,011	0,013	0,007	0,019	0,015	0,019	0,011	0,002	0,008	-	0,01			
7) Explosions of firedamp or coal dust	0,017	0,030	0,010	0,001	0,071	0,006	0,001	0,011	0,016	-	0,002	0,004	0,025	0,007	-	-	0,02			
8) Sudden outbursts of firedamp, suffocation by natural gases	0,002	-	-	-	-	-	-	0,002	0,001	0,003	-	-	-	-	-	-	-			
9) Underground combustion and fires	-	-	0,002	0,001	-	-	-	0,002	-	-	0,002	-	-	-	-	0,003	0,01			
10) Inrushes of water	0,002	-	-	-	0,001	0,002	0,003	-	0,001	-	0,002	-	0,009	0,002	0,003	0,009	-			
11) Electricity	0,010	0,008	0,010	0,018	0,007	0,012	0,008	0,006	0,007	0,005	0,010	0,021	0,014	0,007	0,008	0,006	0,01			
12) Other causes	0,985	1,012	0,513	0,428	0,404	0,390	0,364	0,289	0,354	0,337	0,341	0,333	0,434	0,509	0,73	0,84	0,53			
TOTAL	13,551	12,954	12,986	13,227	13,781	13,781	13,861	13,506	13,242	13,246	14,370	15,160	15,047	15,088	15,60	16,77	16,12			

B. Underground accidents resulting in death within eight weeks

years 1958-1973

per '000,000 man-hours (frequency)

GERMANY	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977
1) Falls of ground	0,268	0,290	0,263	0,216	0,280	0,260	0,200	0,184	0,197	0,206	0,148	0,192	0,113	0,147	0,10	0,08	0,12			
2) Haulage and transport	0,179	0,169	0,182	0,196	0,149	0,178	0,300	0,191	0,175	0,150	0,126	0,143	0,128	0,103	0,16	0,13	0,07			
3) Movement of personnel	0,094	0,097	0,070	0,086	0,059	0,089	0,071	0,070	0,094	0,076	0,079	0,056	0,058	0,032	0,06	0,06	0,06			
4) Machinery, handling of tools and supports	0,010	0,027	0,012	0,027	0,037	0,019	0,028	0,025	0,030	0,020	0,014	0,034	0,031	0,032	0,03	0,02	0,02			
5) Falling objects	0,065	0,041	0,039	0,065	0,072	0,072	0,054	0,058	0,048	0,063	0,051	0,049	0,035	0,047	0,06	0,02	0,04			
6) Explosives	0,009	0,003	0,003	-	0,004	-	0,002	-	-	-	0,004	-	-	-	-	-	-			
7) Explosions of firedamp or coal dust	0,011	0,012	-	-	0,660	0,002	0,002	0,019	0,056	-	0,061	-	-	0,008	-	-	-			
8) Sudden outbursts of firedamp, suffocation by natural gases	0,005	0,003	0,002	0,004	0,002	-	-	0,002	0,002	0,007	-	0,004	-	0,008	0,004	0,005	-			
9) Underground combustion and fires	-	0,003	-	0,002	-	0,006	0,009	0,005	-	-	-	-	-	-	-	-	-			
10) Inrushes of water	-	0,003	0,002	-	-	0,004	-	-	-	-	-	-	0,012	-	-	-	-			
11) Electricity	0,022	0,008	0,002	0,005	0,010	0,002	0,004	0,005	-	0,003	0,004	0,004	0,004	-	0,004	0,005	-			
12) Other causes	0,025	0,025	0,036	0,049	0,049	0,025	0,017	0,023	0,027	0,017	0,022	0,022	0,027	0,083	0,04	0,09	0,03			
TOTAL	0,687	0,680	0,611	0,651	1,344	0,657	0,587	0,582	0,629	0,542	0,509	0,504	0,408	0,460	0,46	0,420	0,34			
BELGIUM	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977
1) Falls of ground	0,223	0,213	0,299	0,266	0,246	0,264	0,222	0,239	0,324	0,264	0,179	0,214	0,268	0,100	0,08	0,21	0,06			
2) Haulage and transport	0,101	0,124	0,157	0,168	0,142	0,245	0,166	0,166	0,187	0,180	0,114	0,097	0,170	0,125	0,18	0,21	0,06			
3) Movement of personnel	0,011	0,027	0,008	0,035	0,010	0,057	0,028	0,011	0,025	-	0,033	-	-	0,049	0,03	-	0,03			
4) Machinery, handling of tools and supports	0,005	0,014	0,016	0,027	0,047	-	0,018	0,052	0,025	0,028	0,065	-	-	0,025	-	0,03	-			
5) Falling objects	0,016	-	0,008	-	0,010	0,019	0,018	-	-	-	0,016	-	-	-	0,03	-	0,03			
6) Explosives	0,011	0,014	-	-	-	-	-	-	-	-	0,016	-	-	-	-	-	-			
7) Explosions of firedamp or coal dust	-	-	0,016	-	-	-	-	0,011	-	-	-	-	-	-	-	-	-			
8) Sudden outbursts of firedamp, suffocation by natural gases	0,016	0,014	-	-	0,047	-	-	0,041	0,013	-	-	-	-	0,025	0,18	0,06	-			
9) Underground combustion and fires	-	0,007	-	-	-	-	-	0,011	-	-	-	-	-	-	-	-	-			
10) Inrushes of water	0,011	-	-	0,044	0,047	0,019	-	-	-	-	-	-	-	-	-	-	-			
11) Electricity	0,021	-	0,024	-	-	0,009	0,009	0,011	-	0,014	0,033	0,019	0,024	-	-	-	-			
12) Other causes	0,005	-	0,008	0,009	0,019	0,028	0,009	-	0,013	0,042	-	-	-	-	0,03	0,03	-			
TOTAL	0,420	0,413	0,536	0,549	0,568	0,641	0,471	0,542	0,587	0,528	0,456	0,330	0,462	0,324	0,53	0,54	0,20			



B. Underground accidents resulting in death within eight weeks

years 1958-1973
per '000,000 man-hours (frequency)

FRANCE *	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977
1) Falls of ground	0,235	0,192	0,186	0,219	0,167	0,120	0,127	0,164	0,214	0,159	0,177	0,149	0,143	0,117	0,07	0,20	0,11			
2) Haulage and transport	0,115	0,085	0,082	0,122	0,077	0,121	0,141	0,052	0,126	0,088	0,101	0,186	0,127	0,108	0,08	0,07	0,12			
3) Movement of personnel	0,007	0,018	0,027	0,008	0,043	0,009	0,009	0,042	0,024	0,016	0,025	0,014	0,016	0,072	0,01	0,01	0,01			
4) Machinery, handling of tools and supports	0,018	0,040	0,016	0,008	0,030	0,009	0,036	0,009	0,015	0,016	0,006	-	0,032	0,027	-	0,02	0,03			
5) Falling objects	0,025	0,007	0,004	0,017	0,030	0,009	0,018	0,019	0,015	0,011	0,031	0,014	0,016	0,045	-	0,04	0,03			
6) Explosives	-	0,026	-	-	-	0,005	0,005	0,009	0,005	0,005	0,006	-	0,108	0,018	-	-	-			
7) Explosions of firedamp or coal dust	0,115	0,121	-	-	0,004	-	-	0,155	-	-	0,038	-	0,127	-	-	-	0,53			
8) Sudden outbursts of firedamp, suffocation by natural gases	0,043	0,026	0,019	0,004	-	0,019	0,009	-	0,005	0,027	0,019	0,007	-	0,072	-	0,01	-			
9) Underground combustion and fires	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0,01	-	0,01			
10) Inrushes of water	-	-	-	0,004	-	-	-	0,005	-	0,005	-	-	0,016	-	0,01	-	-			
11) Electricity	-	0,011	0,012	-	0,009	0,024	-	-	0,010	-	-	0,007	-	-	-	-	-			
12) Other causes	0,036	0,029	0,008	-	0,009	0,014	0,014	-	0,005	0,005	-	0,007	-	0,009	0,03	-	-			
TOTAL	0,594	0,555	0,354	0,382	0,369	0,330	0,359	0,455	0,419	0,332	0,403	0,384	0,484	0,468	0,21	0,37	0,39			
ITALY	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977
1) Falls of ground	0,167	-	0,201	0,225	-	0,366	-	-	-	-	-	-	-	-	2,20	-	-			
2) Haulage and transport	-	0,197	-	-	-	-	-	-	-	0,797	-	-	-	-	-	-	-			
3) Movement of personnel	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
4) Machinery, handling of tools and supports	-	-	-	-	-	-	-	-	-	0,797	-	-	-	-	-	-	-			
5) Falling objects	-	0,197	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
6) Explosives	0,501	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
7) Explosions of firedamp or coal dust	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
8) Sudden outbursts of firedamp, suffocation by natural gases	0,167	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
9) Underground combustion and fires	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
10) Inrushes of water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
11) Electricity	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
12) Other causes	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
TOTAL	0,835	0,394	0,201	0,226	-	0,366	-	-	-	1,594	-	-	-	-	2,20	-	-			

* Including Provence as from 1970.

B. Underground accidents resulting in death within eight weeks

years 1958-1973

per '000,000 man-hours (frequency)

NETHERLANDS	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977
1) Falls of ground	0,262	0,064	0,034	0,114	0,062	0,084	0,043	0,044	0,050	0,100	0,172	0,058	0,082	0,101	-	-	-			
2) Haulage and transport	0,077	0,145	0,067	0,095	0,062	0,105	0,172	0,177	0,126	-	0,086	-	0,165	-	0,26	-	-			
3) Movement of personnel	-	-	-	-	-	-	-	-	-	-	-	0,058	-	-	-	-	-			
4) Machinery, handling of tools and supports	0,015	0,016	-	-	0,041	-	-	0,022	-	0,067	-	0,117	-	-	-	-	-			
5) Falling objects	-	0,016	-	-	-	-	0,043	-	-	-	0,043	-	-	-	-	-	-	0,521		
6) Explosives	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
7) Explosions of firedamp or coal dust	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
8) Sudden outbursts of firedamp, suffocation by natural gases	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
9) Underground combustion and fires	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
10) Inrushes of water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
11) Electricity	-	-	-	0,019	-	-	-	-	-	-	-	-	-	-	-	-	-			
12) Other causes	-	-	0,017	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
TOTAL	0,355	0,241	0,119	0,229	0,166	0,189	0,258	0,243	0,176	0,167	0,301	0,233	0,247	0,101	0,26	-	0,521			
COMMUNITY	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977
1) Falls of ground	0,253	0,242	0,235	0,217	0,234	0,217	0,175	0,177	0,208	0,192	0,160	0,176	0,135	0,133	0,092	0,13	0,11			
2) Haulage and transport	0,147	0,141	0,146	0,168	0,124	0,167	0,178	0,149	0,160	0,128	0,115	0,145	0,132	0,104	0,141	0,12	0,08			
3) Movement of personnel	0,057	0,063	0,047	0,056	0,045	0,060	0,045	0,051	0,060	0,044	0,054	0,038	0,039	0,043	0,043	0,04	0,05			
4) Machinery, handling of tools and supports	0,011	0,028	0,012	0,021	0,037	0,013	0,030	0,024	0,023	0,024	0,017	0,023	0,027	0,029	0,019	0,02	0,02			
5) Falling objects	0,045	0,027	0,024	0,041	0,062	0,046	0,037	0,037	0,030	0,036	0,040	0,031	0,025	0,041	0,038	0,02	0,04			
6) Explosives	0,009	0,010	0,002	-	0,002	0,001	0,002	0,002	0,001	0,002	0,006	-	0,002	0,005	-	-	-			
7) Explosions of firedamp or coal dust	0,032	0,036	0,002	-	0,375	0,001	0,001	0,053	0,030	-	0,044	-	0,037	0,005	-	-	0,13			
8) Sudden outbursts of firedamp, suffocation by natural gases	0,016	0,010	0,006	0,003	0,007	0,005	0,002	0,006	0,004	0,012	0,006	0,004	-	0,027	0,022	0,012	-			
9) Underground combustion and fires	-	0,003	-	0,001	-	0,003	0,005	0,005	-	-	-	-	-	-	0,003	-	-			
10) Inrushes of water	0,002	0,002	0,001	0,006	0,005	0,005	-	0,001	-	0,002	-	-	0,011	-	0,003	0,003	-			
11) Electricity	0,016	0,007	0,007	0,004	0,008	0,008	0,003	0,004	0,003	0,004	0,006	0,006	0,004	-	0,003	0,003	-			
12) Other causes	0,023	0,021	0,024	0,029	0,032	0,021	0,014	0,013	0,017	0,015	0,012	0,015	0,016	0,053	0,035	0,06	0,02			
TOTAL	0,610	0,590	0,507	0,546	0,932	0,547	0,492	0,522	0,536	0,457	0,460	0,438	0,429	0,440	0,399	0,413	0,456			

D. RECAPITULATION: COMMUNITY OF THE SIX

Year	Extraction (1)	Under-ground o.m.s. (kg.)	Million man- hours worked	Fatal- ities	Serious in- juries (4) (disable- ment for 8 weeks or over	Fatal- ities per m. tons	Serious in- juries (4) per m. tons	Fatal- ities per m. man- hours	Serious injuries per m. man- hours
1958	252 278	1 634	1 260	770	17 074	3,052	67,68	0,610	13,551
1959	240 602	1 788	1 122	622	14 539	2,585	60,43	0,590	12,950
1960	239 967	1 958	1 037	526	13 459	2,192	56,09	0,507	12,986
1961	235 848	2 100	962	527	12 720	2,235	53,93	0,548	13,227
1962	233 233	2 229	901	840 (3) 541 (4)	12 418	3,602 (3) 2,320 (4)	53,24	0,932 (3) 0,600 (4)	13,781
1963	229 769	2 331	849	465	11 686	2,024	50,86	0,547	13,761
1964	235 007	2 395	841	411	11 726	1,749	49,89	0,493	13,860
1965	224 249	2 461	784	410	10 595	1,828	47,25	0,522	13,506
1966	210 189	2 611	698	374	9 247	1,779	43,99	0,536	13,242
1967	189 484	2 824	587	269	7 781	1,420	41,06	0,457	13,246
1968	181 016	3 065	522	240	7 501	1,326	41,44	0,460	14,370
1969	176 749	3 265	476	209	7 222	1,181	40,82	0,438	15,160
1970	170 355	3 442	438	188	6 591	1,104	38,69	0,429	15,047
1971	164 910	3 514	414	182	6 249	1,104	37,89	0,440	15,088
1972	151 809	3 659	369	147	5 763	1,033	26,34	0,399	15,60
1973	139 700	3 755	332	137	5 560	0,981	39,80	0,413	16,77
1974	133 300	3 742	313	143	5 054	1,073	37,91	0,456	16,12

- (1) Net extraction, slurry and dust.
(2) Incl. Luisenthal explosion.
(3) Excl. Luisenthal explosion.
(4) Casualties were unable to resume work for at least eight weeks.

UNITED KINGDOM

1973	130 200	3 598	306	74	490	0,568	3,76	0,242	1,60
1974	109 200	3 260	268	37	417	0,339	3,82	0,133	1,555

Note: It is only possible to compare the figgers in table 1 (Community of the Six with those in table 2, by referring to the explanatory notes in Section IV, paragraphe 4.2.



ANNEXES

LIST OF ANNEXES

1. Common statistical summary of underground accidents in mines in 1974
2. Terms of reference and rules of procedure of the Mines Safety and Health Commission (Annex II)
3. Terms of reference of the various working parties of the Mines Safety and Health Commission (Annex III)
4. Composition of the Mines Safety and Health Commission, the Restricted Committee and the working parties (Annex IV)
5. Conditions under which exemption might be granted to raise maximum permitted CH₄ limits in Member States (Annex V)
6. First report on tests and criteria of flammability of conveyor belts with fabric cores used in the coal mines of the European Community (Annex VI)
7. Examples of proven and effective methods of installing and operating water sprays on plough faces (Annex to the guide lines concerning the design and use of coal getting and heading machines, relating to the reduction of airborne dust, which were printed as Annex XI to the 11th Report) (Annex VII)
8. Decision of the Mines Safety and Health Commission on the questions asked by CENELEC as regards the design specifications to be shown in the General Requirements for electrical apparatus for use in gassy mines (Annex XIII)
9. Setting up of an Advisory Committee on Safety, Hygiene and Health Protection at Work - 74/325/EEC - Official Journal of 9.7.1974.
Extension of the responsibilities of the Mines Safety and Health Commission to all mineral-extracting industries - 74/326/EEC - Official Journal of 9.7.1974 (Annex IX).
10. Bibliography.

Have been printed separately :

1. Summary of current techniques in shaft winding and rope haulage with special reference to the design of winding engines (ARNOLD)
2. The safety requirements for brakes on winding engines and winches in the shaft winding plant of the German mining industry (HÄUSLER)
3. Shaft winding and safety (HOISCHEN)

ANNEX I

COMMON STATISTICAL SUMMARY OF UNDERGROUND ACCIDENTS
AT MINES IN 1974

MINES SAFETY AND HEALTH COMMISSION

Common Statistics on victims of accidents underground in coal mines

DETAILED BREAKDOWN OF ACCIDENT VICTIMS ACCORDING TO CAUSE AND SITE OF ACCIDENT AND PERIOD OF INCAPACITY

(absolute figures)

YEAR 1974
MAN-HOURS WORKED (1) 190 818 819

Table 1a

COUNTRY : GERMANY
COAL-FIELD : NORDRHEIN-WESTFALEN

SITE OF THE ACCIDENT CAUSES OF ACCIDENTS	Production faces 1					Headings excluding shafts and staple-pits 2					Shafts and staple-pits 3					Other places 4					Total of accidents underground 5					Group accidents (2) 6		
	Period of incapacity																											
	4 to 20 days (3)	21 to 56 days (3)	> 56 days (3)	Fatal accidents	total	4 to 20 days (3)	21 to 56 days (3)	> 56 days (3)	Fatal accidents	total	4 to 20 days (3)	21 to 56 days (3)	> 56 days (3)	Fatal accidents	total	4 to 20 days (3)	21 to 56 days (3)	> 56 days (3)	Fatal accidents	total	4 to 20 days (3)	21 to 56 days (3)	> 56 days (3)	Fatal accidents	total	56 days (3)	Fatal accidents	total
I FALLS OF GROUNDS AND ROCKS	2 909	1 549	481	9	4 948	2 041	936	254	10	3 241	30	12	3	1	46	24	13	1	-	38	5 004	2 510	739	20	8 273	1	5	11
II TRANSPORT, TOTAL	15	33	20	-	68	414	378	272	11	1 075	41	45	29	3	118	11	8	1	-	20	481	464	322	14	1 281	-	-	-
a) Continuous Transport	13	19	11	-	43	138	109	68	5	320	2	3	-	5	4	1	1	-	6	157	132	80	5	374	-	-	-	
b) Discontinuous Transport	2	14	9	-	25	276	269	204	6	755	39	42	29	3	113	7	7	-	14	324	332	242	9	907	-	-	-	
III FALLS AND MOVEMENT OF THE VICTIM, TOTAL	885	515	131	3	1 534	3 631	12 096	600	4	6 331	206	170	47	6	429	145	76	23	-	244	4 867	2 857	801	13	8 538	-	-	-
a) while moving about the mine	36	12	9	-	57	594	278	102	-	974	25	15	2	2	44	5	4	1	-	10	660	309	114	2	1 085	-	-	-
b) in the course of other activities	849	503	122	3	1 477	3 037	11 818	498	4	5 357	181	155	45	4	385	140	72	22	-	234	4 207	2 548	687	11	7 453	-	-	-
IV MACHINES, TOOLS AND SUPPORTS TOTAL	934	602	153	3	1 692	727	357	89	-	1 173	18	11	2	-	31	56	24	4	-	84	1 735	994	248	3	2 980	-	-	-
a) Machines	52	47	22	-	121	25	26	13	-	64	-	-	-	-	1	2	-	-	3	78	75	35	-	188	-	-	-	
b) Tools	256	128	29	-	413	495	233	47	-	779	17	11	2	-	30	55	21	3	-	79	827	393	81	-	1 301	-	-	-
c) Supports	626	427	102	3	1 158	203	98	29	-	330	1	-	-	-	1	-	1	1	-	2	830	526	132	3	1 491	-	-	-
V FALLS OF OBJECTS	1 547	884	299	5	2 735	1 989	976	324	3	3 292	85	52	28	-	165	76	36	15	-	127	3 697	1 948	666	8	6 319	-	-	-
VI EXPLOSIVES	-	1	-	-	1	1	1	1	-	3	-	-	-	-	-	-	-	-	-	-	1	2	1	-	4	-	-	-
VII IGNITIONS OR EXPLOSIONS OF FIREDAMP AND COAL DUST	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VIII OUTBURSTS OF GAS, DE-OXYGENATION, SUFFOCATION OR POISONING BY NATURAL GASES (CO ₂ , CH ₄ , CO, H ₂ S), TOTAL	-	-	-	-	-	1	-	-	-	1	-	-	-	-	-	-	-	-	-	-	1	-	-	-	1	-	-	-
a) Outbursts of Gas	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
b) De-oxygenation and Poisoning by natural Gases	-	-	-	-	-	1	-	-	-	1	-	-	-	-	-	-	-	-	-	-	1	-	-	-	1	-	-	-
IX HEATINGS OR FIRES	-	-	-	-	-	1	1	-	-	2	-	-	-	-	-	-	-	-	-	-	1	1	-	-	2	-	-	-
X INRUSHES	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
XI ELECTRICITY	-	-	-	-	-	5	9	1	-	15	-	-	-	-	-	-	5	-	-	5	5	14	1	-	20	-	-	-
XII OTHER CAUSES	94	72	26	4	196	318	188	66	2	574	34	16	12	1	63	35	13	3	-	51	481	289	107	7	884	-	-	-
TOTAL	6 384	3 656	1 110	24	11 174	9 128	4 942	1 607	30	15 707	414	306	121	11	852	347	175	47	-	569	16 273	9 079	2 885	65	28 302	1	5	11

(1) Number of hours worked by pit staff and employees of contractor firms who belong to a miners' social insurance scheme.

(2) Accidents involving more than five casualties (i.e. who either died or were unable to resume work underground for at least eight weeks).

(3) Calendar days

MINES SAFETY AND HEALTH COMMISSION

Common Statistics on victims of accidents underground in coal mines

DETAILED BREAKDOWN OF ACCIDENT VICTIMS ACCORDING TO CAUSE AND SITE OF ACCIDENT AND PERIOD OF INCAPACITY

(frequency rates)

COUNTRY GERMANY
COAL-FIELD NORDRHEIN-WESTFALEN

YEAR 1974
MAN-HOURS WORKED (1) 190 818 819

Table 1b

SITE OF THE ACCIDENT	Production faces 1					Headings excluding shafts and staple-pits 2					Shafts and staple-pits 3					Other places 4					Total of accidents underground 5					Group accidents (2) 6		
	4 to 20 days (2)	21 to 56 days (2)	> 56 days (2)	Fatal accidents	total	4 to 20 days (2)	21 to 56 days (2)	> 56 days (2)	Fatal accidents	total	4 to 20 days (2)	21 to 56 days (2)	> 56 days (2)	Fatal accidents	total	4 to 20 days (2)	21 to 56 days (2)	> 56 days (2)	Fatal accidents	total	4 to 20 days (2)	21 to 56 days (2)	> 56 days (2)	Fatal accidents	total	56 days (2)	Fatal accidents	total
I. FALLS OF GROUNDS AND ROCKS	15.24	8.12	2.52	0.05	25.93	10.70	4.91	1.33	0.05	16.99	0.16	0.06	0.02	0.01	0.24	0.13	0.07	0.01	-	0.19	26.22	13.15	3.87	0.10	43.36	0.01	0.03	0.06
II. TRANSPORT, TOTAL	0.08	0.17	0.10	-	0.36	2.17	1.98	1.43	0.06	5.63	0.21	0.24	0.15	0.02	0.62	0.06	0.04	0.01	-	0.11	2.52	2.43	1.69	0.07	6.71	-	-	-
a) Continuous Transport	0.07	0.10	0.06	-	0.23	0.72	0.57	0.36	0.03	1.68	0.01	0.02	-	-	0.03	0.02	0.01	0.01	-	0.04	0.82	0.69	0.42	0.03	1.96	-	-	-
b) Discontinuous Transport	0.01	0.07	0.05	-	0.13	1.45	1.41	1.07	0.03	3.96	0.20	0.22	0.15	0.02	0.59	0.04	0.04	-	-	0.08	1.70	1.74	1.27	0.05	4.75	-	-	-
III FALLS AND MOVEMENT OF THE VICTIM, TOTAL	4.64	2.70	0.69	0.02	8.04	19.03	10.98	3.14	0.02	33.18	1.08	0.89	0.25	0.03	2.25	0.76	0.40	0.12	-	1.28	25.51	14.97	4.20	0.07	44.78	-	-	-
a) while moving about the mine	0.19	0.06	0.05	-	0.30	3.11	1.46	0.53	-	5.10	0.13	0.08	0.01	0.01	0.23	0.03	0.02	0.01	-	0.05	3.46	1.62	0.60	0.01	5.69	-	-	-
b) in the course of other activities	4.45	2.64	0.64	0.02	7.74	15.92	9.53	2.61	0.02	27.97	0.95	0.81	0.24	0.02	2.02	0.73	0.38	0.11	-	1.23	22.05	13.35	3.60	0.06	39.06	-	-	-
IV MACHINES, TOOLS AND SUPPORTS TOTAL	4.89	3.15	0.80	0.02	8.87	3.81	1.87	0.47	-	6.15	0.09	0.06	0.01	-	0.16	0.29	0.13	0.02	-	0.44	9.09	5.21	1.30	0.02	15.62	-	-	-
a) Machines	0.27	0.25	0.12	-	0.63	0.13	0.14	0.07	-	0.34	-	-	-	-	-	0.01	0.01	-	-	0.02	0.41	0.39	0.18	-	0.99	-	-	-
b) Tools	1.34	0.67	0.15	-	2.16	2.62	1.22	0.25	-	4.08	0.09	0.06	0.01	-	0.16	0.28	0.11	0.02	-	0.41	4.33	2.06	0.42	-	6.82	-	-	-
c) Supports	3.28	2.24	0.53	0.02	6.07	1.06	0.51	0.15	-	1.73	0.01	-	-	-	0.01	-	0.01	0.01	-	0.01	4.35	2.76	0.69	0.02	7.81	-	-	-
V FALLS OF OBJECTS	8.11	4.63	1.57	0.03	14.33	10.42	5.11	1.70	0.02	17.25	0.45	0.27	0.15	-	0.86	0.40	0.19	0.08	-	0.67	19.37	10.21	3.49	0.04	33.12	-	-	-
VI. EXPLOSIVES	-	0.01	-	-	0.01	0.01	0.01	0.01	-	0.02	-	-	-	-	-	-	-	-	-	-	0.01	0.01	0.01	-	0.02	-	-	-
VII. IGNITIONS OR EXPLOSIONS OF FIRE DAMP AND COAL DUST	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VIII OUTBURSTS OF GAS, DE-OXYGENATION, SUFFOCATION OR POISONING BY NATURAL GASES (CO ₂ , CH ₄ , CO, H ₂ S), TOTAL	-	-	-	-	-	0.01	-	-	-	0.01	-	-	-	-	-	-	-	-	-	-	0.01	-	-	-	0.01	-	-	-
a) Outbursts of Gas	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
b) De-oxygenation and Poisoning by natural Gases	-	-	-	-	-	0.01	-	-	-	0.01	-	-	-	-	-	-	-	-	-	-	0.01	-	-	-	0.01	-	-	-
IX. HEATINGS OR FIRES	-	-	-	-	-	0.01	0.01	-	-	0.02	-	-	-	-	-	-	-	-	-	-	0.01	0.01	-	-	0.01	-	-	-
X INRUSHES	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
XI ELECTRICITY	-	-	-	-	-	0.03	0.05	0.01	-	0.08	-	-	-	-	-	-	0.03	-	-	0.03	0.03	0.07	0.01	-	0.10	-	-	-
XII OTHER CAUSES	0.49	0.38	0.14	0.02	1.03	1.67	0.99	0.35	0.01	3.01	0.18	0.08	0.06	0.01	0.33	0.18	0.07	0.02	-	0.27	2.52	1.51	0.56	0.04	4.63	-	-	-
TOTAL	33.46	19.16	5.82	0.13	58.55	17.84	25.90	8.42	0.16	82.31	2.17	1.60	0.63	0.06	4.46	1.82	0.92	0.25	-	2.98	85.27	47.58	15.12	0.34	148.31	0.01	0.03	0.06

(1) Number of hours worked by pit staff and employees of contractor firms who belong to a miners' social insurance scheme

(2) Accidents involving more than five casualties (i.e. who either died or were unable to resume work underground for at least eight weeks)

(3) Calendar days

DETAILED BREAKDOWN OF VICTIMS ACCORDING TO LOCATION
AND NATURE OF INJURY AND PERIOD OF INCAPACITY

(absolute figures)

COUNTRY GERMANY
COAL-FIELD NORDRHEIN-WESTFALEN

YEAR 1974
MAN-HOURS WORKED (1) 190 818 819

NATURE OF THE INJURY	Amputations and enucleations 1			Fractures with or without dislocation 2			Luxations, twist and sprains 3			Concussion and internal injury 4			Open wounds contusion and muscular abrasions 5			Burns and harmful effects of electricity and radiation 6			Poisoning and suffocation 7			Multiple injuries of those not specified (2) 8			TOTAL 9				
	> 56 days (5)	Fatal accidents	total	> 56 days (5)	Fatal accidents	total	> 56 days (5)	Fatal accidents	total	> 56 days (5)	Fatal accidents	total	> 56 days (5)	Fatal accidents	total	> 56 days (5)	Fatal accidents	total	> 56 days (5)	Fatal accidents	total	4 to 20 days (5)	21 to 56 days (5)	> 56 days (5)	Fatal accidents	total			
LOCATION OF THE INJURY																													
I. Head and neck	-	2	5	47	28	247	4	-	37	17	1	132	56	4	2.624	-	-	21				-	-	5	2.314	599	124	35	3.072
II. Eyes	1	-	2							1	-	7	24	-	552	7	-	42				3	-	8	516	59	36	-	611
III. Trunk	-	-	-	103	9	334	-	-	36	5	-	23	49	1	1502	2	-	14				-	-	-	1.150	590	159	10	1.909
IV. Upper limbs (excluding the hands) (3)	3	-	3	182	-	283	17	-	90				72	-	2720	-	-	24				-	-	3	2.175	674	274	-	3.123
V. Hands	75	-	183	684	-	3.100	45	-	263				225	-	7662	4	-	35				-	-	4	5.751	4.463	1.033	-	11.247
VI. Lower limbs (excluding feet) (4)	3	-	3	269	2	342	72	-	320				180	1	2862	2	-	39				-	-	1	1.884	1.154	526	3	3.567
VII. Feet	7	-	13	473	1	1.107	42	-	737				105	-	2106	2	-	11				-	-	1	2.055	1.290	629	1	3.975
VIII. Multiple locations	3	4	7	55	7	90	2	-	17	-	-	14	42	1	645	2	-	18				-	2	2	425	249	104	14	794
IX. Not specified																-	-	-	-	1	4	-	1	1	2	1	-	2	5
TOTAL	92	6	217	1.813	47	5.503	182	-	1.500	23	1	176	753	7	20673	19	-	204	-	1	4	3	3	25	16 272	9 079	2 885	65	28 302

(1) Number of hours worked by pit staff and employees of contractor firms who belong to a miner's social insurance scheme.

(2) including complications.

(3) The shoulders and the wrists are included under „upper limbs“.

(4) The hips and the ankles are included under „Lower limbs“.

(5) Calendar days.

DETAILED BREAKDOWN OF VICTIMS ACCORDING TO LOCATION
AND NATURE OF INJURY AND PERIOD OF INCAPACITY

Table 2b

COUNTRY GERMANY
COAL-FIELD H.R.W.

(Frequency rates)

YEAR 1974
MAN-HOURS WORKED (1) 190 818 819

NATURE OF THE INJURY	Amputations and enucleations 1			Fractures with or without dislocation 2			Luxations, twist and sprains 3			Concussion and internal injury 4			Open wounds contusion and muscular abrasions 5			Burns and harmful effects of electricity and radiation 6			Poisoning and suffocation 7			Multiple injuries of those not specified (2) 8			TOTAL 9					
	> 56 days (3)	Fatal accidents	total	> 56 days (3)	Fatal accidents	total	> 56 days (3)	Fatal accidents	total	> 56 days (3)	Fatal accidents	total	> 56 days (3)	Fatal accidents	total	> 56 days (3)	Fatal accidents	total	> 56 days (3)	Fatal accidents	total	> 56 days (3)	Fatal accidents	total	4 to 20 days (3)	21 to 56 days (3)	> 56 days (3)	Fatal accidents	total	
LOCATION OF THE INJURY	-	0,01	0,03	0,25	0,15	1,29	0,02	-	0,19	0,09	0,01	0,69	0,29	0,02	13,75	-	-	0,11				-	-	0,03	12,13	3,14	0,65	0,18	16,10	
I. Head and neck																														
II. Eyes	0,01	-	0,01							0,01	-	0,04	0,13	-	2,89	0,04	-	0,22				0,02	-	0,04	2,70	0,31	0,19	-	3,20	
III. Trunk	-	-	-	0,54	0,05	1,75	-	-	0,19	0,03	-	0,12	0,26	0,01	7,67	0,01	-	0,07				-	-	-	6,03	3,09	0,83	0,05	10,00	
IV. Upper limbs (excluding the hands) (2)	0,02	-	0,02	0,95	-	1,48	0,09	-	0,47				0,38	-	14,25	-	-	0,13				-	-	0,02	11,40	3,53	1,44	-	16,37	
V. Hands	0,39	-	0,96	3,58	-	16,25	0,24	-	1,38				1,18		40,15	0,02	-	0,18				-	-	0,02	30,14	23,39	5,41	-	58,94	
VI. Lower limbs (excluding feet) (4)	0,02	-	0,02	1,41	0,01	1,79	0,38	-	1,68				0,94	0,01	15,00	0,01		0,20				-	-	0,01	9,87	6,05	2,76	0,02	18,69	
VII. Feet	0,04	-	0,07	2,48	0,01	5,80	0,22	-	3,86				0,55	-	11,04	0,01	-	0,06				-	-	0,01	10,77	6,76	3,30	0,01	20,84	
VIII. Multiple locations	0,02	0,02	0,04	0,29	0,04	0,47	0,01	-	0,09	-	-	0,07	0,22	0,01	3,38	0,01	-	0,09				-	0,01	0,01	2,23	1,30	0,55	0,07	4,15	
IX. Not specified																-	-	-	-	0,01	0,04	-	0,01	0,01	0,01	0,01	-	0,01	0,03	
TOTAL	0,48	0,03	1,14	9,50	0,25	28,84	0,95		7,86	0,12	0,01	0,92	3,95	0,04	108,33	0,10	-	1,07	-	0,01	0,04	0,02	0,02	0,13	85,27	47,58	15,12	0,34	148,31	

(1) Number of hours worked by pit staff and employees of contractor firms who belong to a miner's social insurance scheme.

(2) Including complications.

(3) The shoulders and the wrists are included under „upper limbs“.

(4) The hips and the ankles are included under „Lower limbs“.

(5) Calendar days.

MINES SAFETY AND HEALTH COMMISSION

Common Statistics on victims of accidents underground in coal mines

DETAILED BREAKDOWN OF ACCIDENT VICTIMS ACCORDING TO CAUSE AND SITE OF ACCIDENT AND PERIOD OF INCAPACITY

(absolute figures)

COUNTRY GERMANY
COAL-FIELD SAAR

YEAR 1974
MAN-HOURS WORKED (1) 18 649 912

Table 1a

SITE OF THE ACCIDENT	Production faces 1					Headings excluding shafts and staple-pits 2					Shafts and staple-pits 3					Other places 4					Total of accidents underground 5					Group accidents (2) 6		
	4 to 20 days (3)	21 to 56 days (3)	> 56 days (3)	Fatal accidents	total	4 to 20 days (3)	21 to 56 days (3)	> 56 days (3)	Fatal accidents	total	4 to 20 days (3)	21 to 56 days (3)	> 56 days (3)	Fatal accidents	total	4 to 20 days (3)	21 to 56 days (3)	> 56 days (3)	Fatal accidents	total	4 to 20 days (3)	21 to 56 days (3)	> 56 days (3)	Fatal accidents	total	56 days (3)	Fatal accidents	total
I. FALLS OF GROUNDS AND ROCKS	236	132	82	5	455	98	53	31	-	182	-	-	-	-	-	7	4	2	-	13	341	189	115	5	650	-	-	-
II. TRANSPORT. TOTAL	3	5	9	-	17	42	24	18	-	84	-	-	-	-	-	6	4	3	-	13	51	33	30	-	114	-	-	-
a) Continuous Transport	-	5	-	-	5	3	1	-	-	4	-	-	-	-	-	1	-	-	-	1	4	6	-	-	10	-	-	-
b) Discontinuous Transport	3	-	9	-	12	39	23	18	-	80	-	-	-	-	-	5	4	3	-	12	47	27	30	-	104	-	-	-
III. FALLS AND MOVEMENT OF THE VICTIM. TOTAL	51	27	13	-	91	49	26	13	-	88	7	4	1	-	12	146	77	42	-	265	253	134	69	-	456	-	-	-
a) while moving about the mine	33	27	12	-	72	34	26	12	-	72	6	1	1	-	8	133	55	16	-	204	206	109	41	-	356	-	-	-
b) in the course of other activities	18	-	1	-	19	15	-	1	-	16	1	3	-	-	4	13	22	26	-	61	47	25	28	-	100	-	-	-
IV. MACHINES, TOOLS AND SUPPORTS TOTAL	62	74	31	1	168	186	133	45	-	364	12	3	3	-	18	-	6	5	-	11	260	216	84	1	561	-	-	-
a) Machines	15	4	3	1	23	9	6	1	-	16	11	3	-	-	14	-	1	1	-	2	35	14	5	1	55	-	-	-
b) Tools	27	32	15	-	74	88	62	19	-	169	1	-	3	-	4	-	5	2	-	7	116	99	39	-	254	-	-	-
c) Supports	20	38	13	-	71	89	65	25	-	179	-	-	-	-	-	-	-	2	-	2	109	103	40	-	252	-	-	-
V. FALLS OF OBJECTS	85	18	29	-	132	50	9	4	-	63	11	-	1	-	12	51	-	6	-	57	197	27	40	-	264	-	-	-
VI. EXPLOSIVES	-	-	-	-	-	-	-	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	1	-	1	-	-	-
VII. IGNITIONS OR EXPLOSIONS OF FIREDAMP AND COAL DUST	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VIII. OUTBURSTS OF GAS, DE-OXYGENATION, SUFFOCATION OR POISONING BY NATURAL GASES (CO ₂ , CH ₄ , CO, H ₂ S), TOTAL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
a) Outbursts of Gas	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
b) De-oxygenation and Poisoning by natural Gases	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IX. HEATINGS OR FIRES	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
X. INRUSHES	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
XI. ELECTRICITY	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
XII. OTHER CAUSES	1	-	-	-	1	1	-	-	-	1	1	-	-	-	1	5	-	1	-	6	8	-	1	-	9	-	-	-
TOTAL	438	256	164	6	864	426	245	112	-	783	31	7	5	-	43	215	91	59	-	365	1 110	599	340	6	2 055	-	-	-

(1) Number of hours worked by pit staff and employees of contractor firms who belong to a miners' social insurance scheme.

(2) Accidents involving more than five casualties (i.e. who either died or were unable to resume work underground for at least eight weeks).

(3) Calendar days

MINES SAFETY AND HEALTH COMMISSION

Common Statistics on victims of accidents underground in coal mines

DETAILED BREAKDOWN OF ACCIDENT VICTIMS ACCORDING TO CAUSE AND SITE OF ACCIDENT AND PERIOD OF INCAPACITY

(frequency rates)

COUNTRY GERMANY
COAL-FIELD SAAR

YEAR 1974
MAN-HOURS WORKED ⁽¹⁾ 18 649 912

Table 1b

SITE OF THE ACCIDENT CAUSES OF ACCIDENTS	Production faces 1					Headings excluding shafts and staple-pits 2					Shafts and staple-pits 3					Other places 4					Total of accidents underground 5					Group accidents ⁽²⁾ 6		
	Period of incapacity																											
	4 to 20 days ⁽³⁾	21 to 56 days ⁽³⁾	> 56 days ⁽³⁾	Fatal accidents	total	4 to 20 days ⁽³⁾	21 to 56 days ⁽³⁾	> 56 days ⁽³⁾	Fatal accidents	total	4 to 20 days ⁽³⁾	21 to 56 days ⁽³⁾	> 56 days ⁽³⁾	Fatal accidents	total	4 to 20 days ⁽³⁾	21 to 56 days ⁽³⁾	> 56 days ⁽³⁾	Fatal accidents	total	4 to 20 days ⁽³⁾	21 to 56 days ⁽³⁾	> 56 days ⁽³⁾	Fatal accidents	total	56 days ⁽³⁾	Fatal accidents	total
I FALLS OF GROUNDS AND ROCKS	12.65	7.08	4.40	0.27	24.40	5.25	2.54	1.66	-	9.76	-	-	-	-	0.38	0.21	0.11	-	0.70	18.28	10.13	6.17	0.27	34.85	-	-	-	
II TRANSPORT, TOTAL	0.16	0.27	0.48	-	0.91	2.25	1.29	0.97	-	4.50	-	-	-	-	0.32	0.21	0.16	-	0.70	2.73	1.77	1.61	-	6.11	-	-	-	
a) Continuous Transport	-	0.27	-	-	0.27	0.16	0.05	-	-	0.21	-	-	-	-	0.05	-	-	-	0.05	0.21	0.32	-	-	0.54	-	-	-	
b) Discontinuous Transport	0.16	-	0.48	-	0.64	2.09	1.23	0.97	-	4.29	-	-	-	-	0.27	0.21	0.16	-	0.64	2.52	1.45	1.61	-	5.58	-	-	-	
III FALLS AND MOVEMENT OF THE VICTIM, TOTAL	2.73	1.45	0.70	-	4.88	2.63	1.39	0.70	-	4.72	0.38	0.21	0.05	-	0.64	7.83	4.13	2.25	-	14.21	13.57	7.18	3.70	-	24.45	-	-	-
a) while moving about the mine	0.77	1.45	0.64	-	3.86	1.82	1.39	0.64	-	3.86	0.32	0.05	0.05	-	0.43	7.13	2.95	0.86	-	10.94	11.05	5.54	2.20	-	19.09	-	-	-
b) in the course of other activities	0.97	-	0.05	-	1.02	0.80	-	0.05	-	0.86	0.05	0.16	-	-	0.21	0.70	1.18	1.39	-	3.27	2.52	1.34	1.50	-	5.36	-	-	-
IV MACHINES, TOOLS AND SUPPORTS TOTAL	3.32	3.97	1.66	0.05	9.01	9.97	7.13	2.41	-	19.52	0.64	0.16	0.16	-	0.97	-	0.32	0.27	-	0.59	13.94	11.58	4.50	0.05	30.68	-	-	-
a) Machines	0.80	0.21	0.16	0.05	1.23	0.48	0.32	0.05	-	0.86	0.59	0.16	-	-	0.75	-	0.05	0.05	-	0.10	1.88	0.75	0.27	0.05	2.95	-	-	-
b) Tools	1.45	1.72	0.80	-	3.97	4.72	3.32	1.02	-	9.06	0.05	-	0.16	-	-	-	0.27	0.11	-	0.38	6.22	5.31	2.09	-	13.62	-	-	-
c) Supports	1.07	2.04	0.70	-	3.81	4.77	3.49	1.34	-	9.60	-	-	-	-	-	-	-	0.11	-	0.11	5.84	5.52	2.14	-	13.51	-	-	-
V. FALLS OF OBJECTS	4.56	0.97	1.55	-	7.08	2.68	0.48	0.21	-	3.38	0.59	-	0.05	-	0.64	2.73	-	0.32	-	3.06	10.56	1.45	2.14	-	14.16	-	-	-
VI EXPLOSIVES	-	-	-	-	-	-	-	0.05	-	0.05	-	-	-	-	-	-	-	-	-	-	-	-	0.05	-	0.05	-	-	-
VII IGNITIONS OR EXPLOSIONS OF FIREDAMP AND COAL DUST	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VIII. OUTBURSTS OF GAS, DE-OXYGENATION, SUFFOCATION OR POISONING BY NATURAL GASES (CO ₂ , CH ₄ , CO, H ₂ S), TOTAL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
a) Outbursts of Gas	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
b) De-oxygenation and Poisoning by natural Gases	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IX HEATINGS OR FIRES	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
X INRUSHES	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
XI ELECTRICITY	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
XII. OTHER CAUSES	0.05	-	-	-	0.05	0.05	-	-	-	0.05	0.05	-	-	-	0.05	0.27	-	0.05	-	0.32	0.43	-	0.05	-	0.48	-	-	-
TOTAL	23.49	13.73	8.79	0.32	46.33	22.84	13.14	6.61	-	41.95	1.66	0.38	0.27	-	2.31	11.53	4.88	3.16	-	19.57	59.52	32.52	18.23	0.32	110.19	-	-	-

⁽¹⁾ Number of hours worked by pit staff and employees of contractor firms who belong to a miners' social insurance scheme
⁽²⁾ Accidents involving more than five casualties (i.e. who either died or were unable to resume work underground for at least eight weeks)
⁽³⁾ Calendar days

DETAILED BREAKDOWN OF VICTIMS ACCORDING TO LOCATION AND NATURE OF INJURY AND PERIOD OF INCAPACITY

(absolute figures)

COUNTRY GERMANY
COAL-FIELD SAAR

YEAR 1974
MAN-HOURS WORKED (1) 18,649,912

NATURE OF THE INJURY	Amputations and enucleations 1			Fractures with or without dislocation 2			Luxations, twist and sprains 3			Concussion and internal injury 4			Open wounds contusion and muscular abrasions 5			Burns and harmful effects of electricity and radiation 6			Poisoning and suffocation 7			Multiple injuries of those not specified (8) 8			TOTAL 9							
	> 56 days (2)	Fatal accidents	total	> 56 days (2)	Fatal accidents	total	> 56 days (2)	Fatal accidents	total	> 56 days (2)	Fatal accidents	total	> 56 days (2)	Fatal accidents	total	> 56 days (2)	Fatal accidents	total	> 56 days (2)	Fatal accidents	total	4 to 20 days (3)	21 to 56 days (3)	> 56 days (3)	Fatal accidents	total						
LOCATION OF THE INJURY																																
I. Head and neck	1	-	1	5	-	5	1	-	1	-	-	-	15	-	15	-	-	-	-	-	-	-	-	-	-	-	120	68	22	-	210	
II. Eyes	-	-	-							1	-	1	5	-	5	-	-	-									19	16	6	-	41	
III. Trunk	-	-	-	3	-	3	-	-	-	-	-	-	11	-	11	-	-	-									60	51	15	-	126	
IV. Upper limbs (excluding the hands) (2)	1	-	1	6	-	6	1	-	1				20	-	20	-	-	-									117	75	28	-	220	
V. Hands	4	-	4	26	-	26	4	-	4				87	-	87	-	-	-									439	178	121	-	738	
VI. Lower limbs (excluding feet) (4)	2	-	2	13	-	13	2	-	2				44	-	44	-	-	-									146	81	61	-	288	
VII. Feet	2	-	2	14	-	14	2	-	2				48	-	48	-	-	-									120	66	66	-	252	
VIII. Multiple locations	-	-	-	5	-	5	-	-	-	2	-	2	14	-	14	-	-	-									87	64	21	6	178	
IX. Not specified																-	-	-	-	-	-	-	-	-	-	2	-	-	-	2		
TOTAL	10	-	10	72	-	72	10	-	10	3	-	3	244	-	244	-	-	-	-	-	-	-	-	-	1	6	7	1.110	599	340	6	2.055

(1) Number of hours worked by pit staff and employees of contractor firms who belong to a miner's social insurance scheme

(2) including complications

(3) The shoulders and the wrists are included under „upper limbs“

(4) The hips and the ankles are included under „Lower limbs“

(5) Calendar days

MINES SAFETY AND HEALTH
COMMISSION

Common Statistics on victims
of accidents underground in coal mines

DETAILED BREAKDOWN OF VICTIMS ACCORDING TO LOCATION
AND NATURE OF INJURY AND PERIOD OF INCAPACITY

Table 2b

COUNTRY GERMANY
COAL-FIELD SAAR

(Frequency rates)

YEAR 1974
MAN-HOURS WORKED (1) 1.649.912

NATURE OF THE INJURY	Amputations and enucleations 1			Fractures with or without dislocation 2			Luxations, twist and sprains 3			Concussion and internal injury 4			Open wounds contusion and muscular abrasions 5			Burns and harmful effects of electricity and radiation 6			Poisoning and suffocation 7			Multiple injuries of those not specified (2) 8			TOTAL 9				
	> 56 days (3)	Fatal acci- dents	total	> 56 days (3)	Fatal acci- dents	total	> 56 days (3)	Fatal acci- dents	total	> 56 days (3)	Fatal acci- dents	total	> 56 days (3)	Fatal acci- dents	total	> 56 days (3)	Fatal acci- dents	total	> 56 days (3)	Fatal acci- dents	total	4 to 20 days (3)	21 to 56 days (3)	> 56 days (3)	Fatal acci- dents	total			
LOCATION OF THE INJURY																													
I Head and neck	0,05	-	0,05	0,27	-	0,27	0,05	-	0,05	-	-	-	0,80	-	0,80	-	-	-				-	-	-	6,43	3,65	1,18	-	11,26
II. Eyes	-	-	-							0,05	-	0,05	0,27	-	0,27	-	-	-				-	-	-	1,02	0,86	0,32	-	2,20
III Trunk	-	-	-	0,16	-	0,16	-	-	-	-	-	-	0,59	-	0,59	-	-	-				0,05	-	0,05	3,22	2,73	0,80	-	6,75
IV Upper limbs (excluding the hands) (3)	0,05	-	0,05	0,32	-	0,32	0,05	-	0,05				1,07	-	1,07	-	-	-				-	-	-	6,27	4,02	1,50	-	11,79
V Hands	0,21	-	0,21	1,39	-	1,39	0,21	-	0,21				4,66	-	4,66	-	-	-				-	-	-	23,54	9,54	6,49	-	39,57
VI. Lower limbs (excluding feet) (4)	0,11	-	0,11	0,70	-	0,70	0,11	-	0,11				2,36	-	2,36	-	-	-				-	-	-	7,83	4,34	3,27	-	15,44
VII. Feet	0,11	-	0,11	0,75	-	0,75	0,11	-	0,11				2,57	-	2,57	-	-	-				-	-	-	6,43	3,54	3,54	-	13,51
VIII. Multiple locations	-	-	-	0,27	-	0,27	-	-	-	0,11	-	0,11	0,75	-	0,75	-	-	-				-	0,32	0,32	4,66	3,43	1,13	0,32	9,54
IX. Not specified																-	-	-				-	-	-	0,11	-	-	-	0,11
TOTAL	0,54	-	0,54	3,86	-	3,86	0,54	-	0,54	0,16	-	0,16	13,08	-	13,08	-	-	-	-	-	-	0,05	0,32	0,38	59,52	32,12	18,23	0,32	110,19

(1) Number of hours worked by pit staff and employees of contractor firms who belong to a miner's social insurance scheme.

(2) including complications

(3) The shoulders and the wrists are included under „upper limbs“.

(4) The hips and the ankles are included under „Lower limbs“.

(5) Calendar days

MINES SAFETY AND HEALTH COMMISSION

Common Statistics on victims of accidents underground in coal mines

DETAILED BREAKDOWN OF ACCIDENT VICTIMS ACCORDING TO CAUSE AND SITE OF ACCIDENT AND PERIOD OF INCAPACITY

(absolute figures)

COUNTRY GERMANY
COAL-FIELD TOTAL

YEAR 1974
MAN-HOURS WORKED (1) 209 468 731

Table 1a

SITE OF THE ACCIDENT CAUSES OF ACCIDENTS	Production faces 1					Headings excluding shafts and staple-pits 2					Shafts and staple-pits 3					Other places 4					Total of accidents underground 5					Group accidents (2) 6			
	Period of incapacity	4 to 20 days (3)	21 to 56 days (3)	> 56 days (3)	Fatal accidents	total	4 to 20 days (3)	21 to 56 days (3)	> 56 days (3)	Fatal accidents	total	4 to 20 days (3)	21 to 56 days (3)	> 56 days (3)	Fatal accidents	total	4 to 20 days (3)	21 to 56 days (3)	> 56 days (3)	Fatal accidents	total	4 to 20 days (3)	21 to 56 days (3)	> 56 days (3)	Fatal accidents	total	56 days (3)	Fatal accidents	total
I. FALLS OF GROUNDS AND ROCKS	3	145	1 681	563	14	5 403	2 139	989	285	10	3 423	30	12	3	1	46	31	17	3	-	51	5 345	2 699	854	25	8 923	1	5	11
II. TRANSPORT, TOTAL	18	38	29	-	85	456	402	290	11	1 159	41	45	29	3	118	17	12	4	-	33	532	497	352	14	1 395	-	-	-	
a) Continuous Transport	13	24	11	-	48	141	110	68	5	324	2	3	-	-	5	5	1	1	-	7	161	138	80	5	384	-	-	-	
b) Discontinuous Transport	5	14	18	-	37	315	292	222	6	835	39	42	29	3	113	12	11	3	-	26	371	359	272	9	1 011	-	-	-	
III FALLS AND MOVEMENT OF THE VICTIM, TOTAL	936	542	144	3	1 625	3 680	2 122	613	4	6 419	213	174	48	6	441	291	153	65	-	509	5 120	2 991	870	13	8 994	-	-	-	
a) while moving about the mine	69	39	21	-	129	628	304	114	-	1 046	31	16	3	2	52	138	59	17	-	214	866	418	155	2	1 441	-	-	-	
b) in the course of other activities	867	503	123	3	1 496	3 052	1 818	499	4	5 373	182	158	45	4	389	153	94	48	-	295	4 254	2 573	715	11	7 553	-	-	-	
IV MACHINES, TOOLS AND SUPPORTS TOTAL	996	676	184	4	1 860	913	490	134	-	1 537	30	14	5	-	49	56	30	9	-	95	1 995	1 210	332	4	3 541	-	-	-	
a) Machines	67	51	25	1	144	34	32	14	-	80	11	3	-	-	14	1	3	1	-	5	113	89	40	1	243	-	-	-	
b) Tools	283	160	44	-	487	587	295	66	-	948	18	11	5	-	34	55	26	5	-	86	943	492	120	-	1 555	-	-	-	
c) Supports	646	465	115	3	1 229	292	163	54	-	509	1	-	-	-	1	-	1	3	-	4	939	629	172	3	1 743	-	-	-	
V. FALLS OF OBJECTS	1 632	902	328	5	2 867	2 039	985	328	3	3 355	96	52	29	-	177	127	36	21	-	184	3 894	1 975	706	8	6 583	-	-	-	
VI. EXPLOSIVES	-	1	-	-	1	1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	1	2	2	-	5	-	-	-
VII. IGNITIONS OR EXPLOSIONS OF FIREDAMP AND COAL DUST	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VIII OUTBURSTS OF GAS, DE-OXYGENATION, SUFFOCATION OR POISONING BY NATURAL GASES (CO ₂ , CH ₄ , CO, H ₂ S), TOTAL	-	-	-	-	-	1	-	-	-	1	-	-	-	-	-	-	-	-	-	-	1	-	-	-	1	-	-	-	
a) Outbursts of Gas	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
b) De-oxygenation and Poisoning by natural Gases	-	-	-	-	-	1	-	-	-	2	-	-	-	-	-	-	-	-	-	-	1	-	-	-	1	-	-	-	
IX HEATINGS OR FIRES	-	-	-	-	-	1	1	-	-	2	-	-	-	-	-	-	-	-	-	-	1	1	-	-	2	-	-	-	
X. INRUSHES	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
XI ELECTRICITY	-	-	-	-	-	5	9	1	-	15	-	-	-	-	-	-	5	-	-	-	5	5	14	1	-	20	-	-	-
XII. OTHER CAUSES	95	72	26	4	197	319	188	66	2	575	35	16	12	1	64	40	13	4	-	57	489	289	108	7	893	-	-	-	
TOTAL	6 822	3 912	1 274	30	12 038	9 554	5 187	1 719	30	16 490	445	313	126	11	895	562	266	106	-	934	17 383	9 678	3 225	71	30 357	-	-	-	

(1) Number of hours worked by pit staff and employees of contractor firms who belong to a miners' social insurance scheme

(2) Accidents involving more than five casualties (i.e. who either died or were unable to resume work underground for at least eight weeks)

(3) Calendar days

MINES SAFETY AND HEALTH COMMISSION

Common Statistics on victims of accidents underground in coal mines

DETAILED BREAKDOWN OF ACCIDENT VICTIMS ACCORDING TO CAUSE AND SITE OF ACCIDENT AND PERIOD OF INCAPACITY

(frequency rates)

COUNTRY GERMANY
COAL-FIELD TOTAL

YEAR 1974
MAN-HOURS WORKED (1) 209 468 731

Table 1b

SITE OF THE ACCIDENT CAUSES OF ACCIDENTS	Production faces 1					Headings excluding shafts and staple-pits 2					Shafts and staple-pits 3					Other places 4					Total of accidents underground 5					Group accidents (2) 6		
	4 to 20 days (3)	21 to 56 days (3)	> 56 days (3)	Fatal accidents	total	4 to 20 days (3)	21 to 56 days (3)	> 56 days (3)	Fatal accidents	total	4 to 20 days (3)	21 to 56 days (3)	> 56 days (3)	Fatal accidents	total	4 to 20 days (3)	21 to 56 days (3)	> 56 days (3)	Fatal accidents	total	4 to 20 days (3)	21 to 56 days (3)	> 56 days (3)	Fatal accidents	total	56 days (3)	Fatal accidents	total
I. FALLS OF GROUNDS AND ROCKS	15.01	8.03	2.69	0.07	25.79	10.21	4.72	1.36	0.05	16.34	0.14	0.06	0.05	-	0.22	0.15	0.08	0.01	-	0.24	25.52	12.88	4.08	0.12	42.60	-	0.02	0.05
II. TRANSPORT, TOTAL	0.09	0.18	0.14	-	0.41	2.18	1.92	1.38	0.05	5.53	0.20	0.21	0.14	0.01	0.56	0.08	0.06	0.02	-	0.16	2.54	2.37	1.68	0.07	6.66	-	-	-
a) Continuous Transport	0.06	0.11	0.05	-	0.23	0.67	0.53	0.32	0.02	1.55	0.01	0.01	-	-	0.02	0.02	-	-	-	0.03	0.77	0.66	0.38	0.02	1.83	-	-	-
b) Discontinuous Transport	0.02	0.07	0.09	-	0.18	1.50	1.39	1.06	0.03	3.99	0.19	0.20	0.14	0.01	0.54	0.06	0.05	0.01	-	0.12	1.77	1.71	1.30	0.04	4.83	-	-	-
III FALLS AND MOVEMENT OF THE VICTIM, TOTAL	4.47	2.59	0.69	0.01	7.76	17.57	10.13	2.93	0.02	30.64	1.02	0.83	0.23	0.03	2.11	1.39	0.73	0.31	-	2.43	24.44	14.28	4.15	0.06	42.94	-	-	-
a) while moving about the mine	0.33	0.19	0.10	-	0.62	3.00	1.45	0.54	-	4.99	0.15	0.08	0.01	0.01	0.25	0.66	0.28	0.08	-	1.02	4.13	2.00	0.74	0.01	6.88	-	-	-
b) in the course of other activities	4.14	2.40	0.59	0.01	7.14	14.57	8.68	2.38	0.02	25.65	0.87	0.75	0.21	0.02	1.86	0.73	0.45	0.23	-	1.41	20.31	12.28	3.41	0.05	36.06	-	-	-
IV. MACHINES, TOOLS AND SUPPORTS TOTAL	4.75	3.23	0.88	0.02	8.88	4.36	2.34	0.64	-	7.34	0.14	0.07	0.02	-	0.23	0.27	0.14	0.04	-	0.45	9.52	5.78	1.58	0.02	16.90	-	-	-
a) Machines	0.32	0.24	0.12	-	0.69	0.16	0.15	0.07	-	0.38	0.05	0.01	-	-	0.07	-	0.01	-	-	0.02	0.54	0.42	0.20	-	1.16	-	-	-
b) Tools	1.35	0.76	0.21	-	2.32	2.80	1.41	0.32	-	4.53	0.09	0.05	0.02	-	0.16	0.26	0.12	0.02	-	0.41	4.50	2.35	0.57	-	7.42	-	-	-
c) Supports	3.08	2.22	0.55	0.01	5.87	1.39	0.78	0.26	-	2.43	-	-	-	-	-	-	-	0.01	-	0.02	4.48	3.00	0.82	0.01	8.32	-	-	-
V. FALLS OF OBJECTS	7.79	4.31	1.57	0.02	13.69	9.73	4.70	1.57	0.01	16.02	0.46	0.25	0.14	-	0.84	0.61	0.17	0.10	-	0.88	18.59	9.43	3.37	0.04	31.43	-	-	-
VI. EXPLOSIVES	-	-	-	-	-	-	-	0.01	-	0.02	-	-	-	-	-	-	-	-	-	-	-	0.01	0.01	-	0.02	-	-	-
VII. IGNITIONS OR EXPLOSIONS OF FIREDAMP AND COAL DUST	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VIII. OUTBURSTS OF GAS, DE-OXYGENATION, SUFFOCATION OR POISONING BY NATURAL GASES (CO ₂ , CH ₄ , CO, H ₂ S), TOTAL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
a) Outbursts of Gas	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
b) De-oxygenation and Poisoning by natural Gases	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IX. HEATINGS OR FIRES	-	-	-	-	-	-	-	-	-	0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.01	-	-	-
X. INRUSHES	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
XI. ELECTRICITY	-	-	-	-	-	0.02	0.04	-	-	0.07	-	-	-	-	-	-	0.02	-	-	0.02	0.02	0.07	-	-	0.10	-	-	-
XII. OTHER CAUSES	0.45	0.34	0.12	0.02	0.94	1.52	0.90	0.32	0.01	2.75	0.17	0.08	0.06	-	0.31	0.20	0.06	0.02	-	0.27	2.33	1.38	0.52	0.03	4.26	-	-	-
TOTAL	32.57	18.68	6.08	0.14	57.47	45.61	24.76	8.21	0.14	78.72	2.12	1.49	0.60	0.05	4.27	2.68	1.27	0.51	-	4.46	82.99	46.20	15.40	0.34	144.92	-	-	-

(1) Number of hours worked by pit staff and employees of contractor firms who belong to a miners' social insurance scheme
(2) Accidents involving more than five casualties (i.e. who either died or were unable to resume work underground for at least eight weeks)
(3) Calendar days

DETAILED BREAKDOWN OF VICTIMS ACCORDING TO LOCATION AND NATURE OF INJURY AND PERIOD OF INCAPACITY

COUNTRY GERMANY
COAL-FIELD TOTAL

(absolute figures)

YEAR 1974
MAN-HOURS WORKED (1) 209.468.731

NATURE OF THE INJURY	Amputations and enucleations 1			Fractures with or without dislocation 2			Luxations, twist and sprains 3			Concussion and internal injury 4			Open wounds contusion and muscular abrasions 5			Burns and harmful effects of electricity and radiation 6			Poisoning and suffocation 7			Multiple injuries of those not specified (2) 8			TOTAL 9				
	> 56 days (3)	Fatal accidents	total	> 56 days (3)	Fatal accidents	total	> 56 days (3)	Fatal accidents	total	> 56 days (3)	Fatal accidents	total	> 56 days (3)	Fatal accidents	total	> 56 days (3)	Fatal accidents	total	> 56 days (3)	Fatal accidents	total	4 to 20 days (3)	21 to 56 days (3)	> 56 days (3)	Fatal accidents	total			
LOCATION OF THE INJURY																													
I. Head and neck	1	2	7	52	28	252	5	-	38	17	1	132	71	4	2639	-	-	21				-	-	5	2434	667	146	35	3282
II. Eyes	1	-	2							2	-	8	29	-	557	7	-	42				3	-	8	535	75	42	-	652
III. Trunk	-	-	-	106	9	337	-	-	36	5	-	23	60	1	1513	2	-	14				1	-	1	1210	641	174	10	2035
IV. Upper limbs (excluding the hands) (3)	4	-	4	138	-	239	18	-	91				92	-	2740	-	-	24				-	-	3	2292	749	302	-	3343
V. Hands	79	-	187	710	-	3126	49	-	267				312	-	7749	4	-	35				-	-	4	6190	6641	1154	-	11905
VI. Lower limbs (excluding feet) (4)	5	-	5	232	2	355	74	-	322				224	1	2906	2	-	39				-	-	1	2030	1235	567	3	3855
VII. Feet	9	-	15	487	1	1121	44	-	739				153	-	2154	2	-	11				-	-	1	2175	1356	695	1	4227
VIII. Multiple locations	3	4	7	60	7	95	2	-	17	2	-	16	56	1	659	2	-	18				-	8	8	512	213	125	20	970
IX. Not specified																-	-	-	-	1	4	-	1	1	4	1	-	2	7
TOTAL	102	6	227	1885	47	5575	192	-	1510	26	1	179	997	7	20917	19	-	204	-	1	4	4	9	32	17382	9678	3225	71	30356

(1) Number of hours worked by pit staff and employees of contractor firms who belong to a miner's social insurance scheme

(2) Including complications

(3) The shoulders and the wrists are included under „upper limbs“

(4) The hips and the ankles are included under „Lower limbs“

(5) Calendar days

MINES SAFETY AND HEALTH COMMISSION

Common Statistics on victims of accidents underground in coal mines

DETAILED BREAKDOWN OF VICTIMS ACCORDING TO LOCATION AND NATURE OF INJURY AND PERIOD OF INCAPACITY

Table 2b

(Frequency rates)

COUNTRY GERMANY
COAL-FIELD TOTAL

YEAR 1974
MAN-HOURS WORKED (1) 209.468.731

NATURE OF THE INJURY	Amputations and enucleations 1			Fractures with or without dislocation 2			Luxations, twist and sprains 3			Concussion and internal injury 4			Open wounds contusion and muscular abrasions 5			Burns and harmful effects of electricity and radiation 6			Poisoning and suffocation 7			Multiple injuries of those not specified (2) 8			TOTAL 9				
	> 56 days (3)	Fatal accidents	total	> 56 days (3)	Fatal accidents	total	> 56 days (3)	Fatal accidents	total	> 56 days (3)	Fatal accidents	total	> 56 days (3)	Fatal accidents	total	> 56 days (3)	Fatal accidents	total	> 56 days (3)	Fatal accidents	total	4 to 20 days (3)	21 to 56 days (3)	> 56 days (3)	Fatal accidents	total			
LOCATION OF THE INJURY																													
I Head and neck	-	0,01	0,03	0,25	0,13	1,20	0,02	-	0,18	0,08	-	0,63	0,34	0,02	12,60	-	-	0,10				-	-	0,02	11,62	3,10	0,70	0,17	15,67
II. Eyes	-	-	0,01							0,01	-	0,04	0,14	-	2,66	0,03	-	0,20				0,01	-	0,04	2,55	0,36	0,20	-	3,11
III Trunk	-	-	-	0,51	0,04	1,61	-	-	0,17	0,02	-	0,11	0,29	-	7,22	0,01	-	0,07				-	-	-	5,78	3,06	0,83	0,05	9,72
IV. Upper limbs (excluding the hands) (3)	0,02	-	0,02	0,90	-	1,38	0,09	-	0,43				0,44	-	13,08	-	-	0,11				-	-	0,01	10,94	3,58	1,44	-	15,96
V. Hands	0,35	-	0,89	3,39	-	14,92	0,23	-	1,27				1,49	-	36,99	0,02	-	0,17				-	-	0,02	29,55	22,16	5,51	-	57,22
VI. Lower limbs (excluding feet) (4)	0,02	-	0,02	1,35	0,01	1,69	0,35	-	1,54				1,07	-	13,87	0,01	-	0,19				-	-	-	9,69	5,90	2,80	0,01	18,40
VII Feet	0,04	-	0,07	2,32	-	5,35	0,21	-	3,53				0,73	-	10,28	0,01	-	0,05				-	-	-	10,38	6,47	3,32	-	20,18
VIII. Multiple locations	0,01	0,02	0,03	0,29	0,03	0,45	0,01	-	0,08	0,01	-	0,03	0,27	-	3,15	0,01	-	0,09				-	0,04	0,04	2,44	1,49	0,60	0,10	4,63
IX Not specified																-	-	-	-	-	0,02	-	-	-	0,02	-	-	0,01	0,03
TOTAL	0,47	0,03	1,08	9,00	0,22	26,61	0,92	-	7,21	0,12	-	0,85	4,76	0,03	99,86	0,09	-	0,97	-	-	0,02	0,02	0,04	0,15	62,98	46,20	15,40	0,34	144,92

(1) Number of hours worked by pit staff and employees of contractor firms who belong to a miner's social insurance scheme.

(2) Including complications.

(3) The shoulders and the wrists are included under „upper limbs“.

(4) The hips and the ankles are included under „Lower limbs“.

(5) Calendar days

MINES SAFETY AND HEALTH COMMISSION

Common Statistics on victims of accidents underground in coal mines

DETAILED BREAKDOWN OF ACCIDENT VICTIMS ACCORDING TO CAUSE AND SITE OF ACCIDENT AND PERIOD OF INCAPACITY

(absolute figures)

Table 1a

COUNTRY
COAL-FIELD

BELGIUM
TOTAL

YEAR
MAN-HOURS WORKED (1)

1974
28 784 496

SITE OF THE ACCIDENT CAUSES OF ACCIDENTS	Production faces 1					Headings excluding shafts and staple-pits 2					Shafts and staple-pits 3					Other places 4					Total of accidents underground 5					Group accidents (2) 6			
	Period of incapacity	4 to 20 days (3)	21 to 56 days (3)	> 56 days (3)	Fatal accidents	total	4 to 20 days (3)	21 to 56 days (3)	> 56 days (3)	Fatal accidents	total	4 to 20 days (3)	21 to 56 days (3)	> 56 days (3)	Fatal accidents	total	4 to 20 days (3)	21 to 56 days (3)	> 56 days (3)	Fatal accidents	total	4 to 20 days (3)	21 to 56 days (3)	> 56 days (3)	Fatal accidents	total	56 days (3)	Fatal accidents	total
I. FALLS OF GROUNDS AND ROCKS	2 276	434	83	2	2 795	892	119	26	-	1 037	16	3	-	-	19	215	24	6	-	245	3 399	580	115	2	4 096	-	-	-	
II. TRANSPORT, TOTAL	129	44	13	-	186	293	80	29	1	403	78	23	7	1	109	237	58	21	-	316	737	205	70	2	1 014	-	-	-	
a) Continuous Transport	124	44	11	-	179	84	33	11	-	128	1	-	-	-	1	60	12	4	-	76	269	89	26	-	384	-	-	-	
b) Discontinuous Transport	5	-	2	-	7	209	47	18	1	275	77	23	7	1	108	177	46	17	-	240	468	116	44	2	630	-	-	-	
III. FALLS AND MOVEMENT OF THE VICTIM, TOTAL	219	50	10	-	279	409	61	19	-	489	74	17	5	1	97	278	40	15	-	333	980	168	49	1	1 198	-	-	-	
a) while moving about the mine	50	11	4	-	65	115	19	9	-	143	18	4	3	-	25	103	19	6	-	128	286	53	22	-	361	-	-	-	
b) in the course of other activities	169	39	6	-	214	294	42	10	-	346	56	13	2	1	72	175	21	9	-	205	694	115	27	1	837	-	-	-	
IV. MACHINES, TOOLS AND SUPPORTS TOTAL	945	244	38	-	1 227	485	99	10	-	594	41	8	1	-	50	202	29	14	-	245	1 673	380	63	-	2 116	-	-	-	
a) Machines	93	25	9	-	127	57	23	1	-	81	5	2	-	-	7	14	4	4	-	22	169	54	14	-	237	-	-	-	
b) Tools	232	48	7	-	287	179	21	3	-	203	18	4	-	-	22	72	8	3	-	83	501	81	13	-	595	-	-	-	
c) Supports	620	171	22	-	813	249	55	6	-	310	18	2	1	-	21	116	17	7	-	140	1 003	245	36	-	1 284	-	-	-	
V. FALLS OF OBJECTS	428	80	18	-	526	514	103	18	-	635	85	27	3	1	116	335	71	14	-	420	1 362	281	53	1	1 697	-	-	-	
VI. EXPLOSIVES	1	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	1	-	-	-	
VII. IGNITIONS OR EXPLOSIONS OF FIREDAMP AND COAL DUST	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
VIII. OUTBURSTS OF GAS, DE-OXYGENATION, SUFFOCATION OR POISONING BY NATURAL GASES (CO ₂ , CH ₄ , CO, H ₂ S), TOTAL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
a) Outbursts of Gas	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
b) De-oxygenation and Poisoning by natural Gases	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
IX. HEATINGS OR FIRES	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
X. INRUSHES	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
XI. ELECTRICITY	1	-	-	-	1	-	-	1	-	1	-	-	-	-	-	-	-	-	-	-	1	-	1	-	2	-	-	-	
XII. OTHER CAUSES	130	12	4	-	146	97	17	3	-	117	26	4	2	-	32	80	3	3	-	86	333	36	12	-	381	-	-	-	
TOTAL	4 129	864	166	2	5 161	2 690	479	106	1	3 276	320	82	18	3	423	1 347	225	73	-	1 645	8 486	1 650	363	6	10 505	-	-	-	

(1) Number of hours worked by pit staff and employees of contractor firms who belong to a miners' social insurance scheme

(2) Accidents involving more than five casualties (i.e. who either died or were unable to resume work underground for at least eight weeks).

(3) Calendar days.

MINES SAFETY AND HEALTH COMMISSION

Common Statistics on victims of accidents underground in coal mines

DETAILED BREAKDOWN OF ACCIDENT VICTIMS ACCORDING TO CAUSE AND SITE OF ACCIDENT AND PERIOD OF INCAPACITY

(absolute figures)

COUNTRY BELGIUM
COAL-FIELD TOTAL

YEAR 1974
MAN-HOURS WORKED (1) 28 784 496

Table 1b

SITE OF THE ACCIDENT CAUSES OF ACCIDENTS	Production faces 1					Headings excluding shafts and staple-pits 2					Shafts and staple-pits 3					Other places 4					Total of accidents underground 5					Group accidents (2) 6		
	4 to 20 days (3)	21 to 56 days (3)	> 56 days (3)	Fatal accidents	total	4 to 20 days (3)	21 to 56 days (3)	> 56 days (3)	Fatal accidents	total	4 to 20 days (3)	21 to 56 days (3)	> 56 days (3)	Fatal accidents	total	4 to 20 days (3)	21 to 56 days (3)	> 56 days (3)	Fatal accidents	total	4 to 20 days (3)	21 to 56 days (3)	> 56 days (3)	Fatal accidents	total	56 days (3)	Fatal accidents	total
I. FALLS OF GROUNDS AND ROCKS	79.03	15.07	2.88	0.06	97.06	30.98	4.13	0.90	-	36.02	0.55	0.10	-	-	0.66	7.46	0.83	0.20	-	8.51	118.04	20.14	3.99	0.06	142.26	-	-	-
II TRANSPORT, TOTAL	4.44	1.52	0.45	-	6.42	10.17	2.77	1.00	0.03	14.00	2.70	0.79	0.24	0.03	3.78	8.23	2.01	0.72	-	10.97	25.56	7.12	2.43	0.06	35.19	-	-	-
a) Continuous Transport	4.30	1.52	0.38	-	6.21	2.91	1.14	0.38	-	4.44	0.03	-	-	-	0.03	2.08	0.41	0.13	-	2.64	9.34	3.09	0.90	-	13.34	-	-	-
b) Discontinuous Transport	0.13	-	0.06	-	0.20	7.26	1.63	0.62	0.03	9.55	2.67	0.79	0.24	0.03	3.75	6.14	1.59	0.59	-	8.33	16.22	4.02	1.52	0.06	21.85	-	-	-
III. FALLS AND MOVEMENT OF THE VICTIM, TOTAL	7.60	1.73	0.34	-	9.69	14.20	2.11	0.66	-	16.98	2.57	0.59	0.17	0.03	3.36	9.65	1.38	0.52	-	11.56	34.04	5.83	1.70	0.03	41.61	-	-	-
a) while moving about the mine	1.73	0.38	0.13	-	2.25	3.99	0.66	0.31	-	4.96	0.62	0.13	0.10	-	0.86	3.57	0.66	0.20	-	4.44	9.93	1.84	0.76	-	12.54	-	-	-
b) in the course of other activities	5.87	1.35	0.20	-	7.43	10.21	1.45	0.34	-	12.02	1.94	0.45	0.06	0.03	2.50	6.07	0.72	0.31	-	7.12	24.11	3.99	0.93	0.03	29.07	-	-	-
IV. MACHINES, TOOLS AND SUPPORTS TOTAL	32.83	8.44	1.32	-	42.59	1.84	3.43	0.34	-	20.63	1.42	0.27	0.03	-	1.73	7.01	1.00	0.48	-	8.51	58.12	13.16	2.18	-	73.47	-	-	-
a) Machines	3.23	0.86	0.31	-	4.41	1.98	0.79	0.03	-	2.81	0.17	0.06	-	-	0.24	0.48	0.13	0.13	-	0.76	5.87	1.87	0.48	-	8.23	-	-	-
b) Tools	8.05	1.66	0.24	-	9.97	6.21	0.72	0.10	-	7.05	0.62	0.13	-	-	0.76	2.50	0.27	0.10	-	2.88	17.40	2.81	0.45	-	20.67	-	-	-
c) Supports	21.53	5.90	0.76	-	28.20	8.63	1.91	0.20	-	10.76	0.62	0.06	0.03	-	0.72	4.02	0.59	0.24	-	4.86	34.84	8.47	1.25	-	44.57	-	-	-
V. FALLS OF OBJECTS	14.86	2.77	0.62	-	18.27	17.83	3.57	0.62	-	22.06	2.95	0.93	0.10	0.03	4.02	11.63	2.46	0.48	-	14.59	47.31	9.76	1.84	0.03	58.95	-	-	-
VI. EXPLOSIVES	0.03	-	-	-	0.03	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.03	-	-	-	0.03	-	-	-
VII. IGNITIONS OR EXPLOSIONS OF FIREDAMP AND COAL DUST	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VIII. OUTBURSTS OF GAS, DE-OXYGENATION, SUFFOCATION OR POISONING BY NATURAL GASES (CO ₂ , CH ₄ , CO, H ₂ S), TOTAL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
a) Outbursts of Gas	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
b) De-oxygenation and Poisoning by natural Gases	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IX. HEATINGS OR FIRES	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
X. INRUSHES	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
XI. ELECTRICITY	0.06	-	-	-	0.06	-	-	0.03	-	0.03	-	-	-	-	-	0.03	-	-	-	-	0.03	0.10	-	0.03	-	0.13	-	-
XII. OTHER CAUSES	4.51	0.41	0.13	-	5.07	3.36	0.59	0.10	-	4.06	0.90	0.13	0.06	-	1.11	2.77	0.10	0.10	-	2.98	11.56	1.25	0.41	-	13.23	-	-	-
TOTAL	143.41	29.98	5.76	0.06	179.22	93.45	16.64	3.68	0.03	113.81	11.11	2.84	0.62	0.10	14.69	46.83	7.81	2.53	-	57.18	294.81	57.28	12.61	0.20	364.91	-	-	-

(1) Number of hours worked by pit staff and employees of contractor firms who belong to a miners' social insurance scheme
(2) Accidents involving more than five casualties (i.e. who either died or were unable to resume work underground for at least eight weeks)
(3) Calendar days

DETAILED BREAKDOWN OF VICTIMS ACCORDING TO LOCATION
AND NATURE OF INJURY AND PERIOD OF INCAPACITY

Table 2a

COUNTRY BELGIUM
COAL-FIELD TOTAL

(absolute figures)

YEAR 1974
MAN-HOURS WORKED (1) 28,784,496

NATURE OF THE INJURY	Amputations and enucleations 1			Fractures with or without dislocation 2			Luxations, twist and sprains 3			Concussion and internal injury 4			Open wounds contusion and muscular abrasions 5			Burns and harmful effects of electricity and radiation 6			Poisoning and suffocation 7			Multiple injuries of those not specified (2) 8			TOTAL 9				
	> 56 days (5)	Fatal accidents	total	> 56 days (5)	Fatal accidents	total	> 56 days (5)	Fatal accidents	total	> 56 days (5)	Fatal accidents	total	> 56 days (5)	Fatal accidents	total	> 56 days (5)	Fatal accidents	total	> 56 days (5)	Fatal accidents	total	4 to 20 days (5)	21 to 56 days (5)	> 56 days (5)	Fatal accidents	total			
LOCATION OF THE INJURY																													
I. Head and neck	-	-	-	10	2	12	-	-	-	3	-	3	6	-	6	-	-	-	-	-	-	-	-	-	-	-	19	2	21
II. Eyes	1	-	1	-	-	-	-	-	-	-	-	-	6	-	6	-	-	-	-	-	-	-	-	-	-	-	7	-	7
III. Trunk	-	-	-	19	-	19	2	-	2	2	1	3	11	-	11	-	-	-	-	-	-	1	1	2	-	-	35	2	37
IV. Upper limbs (excluding the hands) (3)	-	-	-	20	-	20	2	-	2	-	-	-	12	-	12	1	-	1	-	-	-	-	-	-	-	-	35	-	35
V. Hands	5	-	5	61	-	61	2	-	2	-	-	-	60	-	60	-	-	-	-	-	-	1	-	1	-	-	129	-	129
VI. Lower limbs (excluding feet) (4)	2	-	2	38	-	38	6	-	6	-	-	-	33	-	33	-	-	-	-	-	-	7	-	7	-	-	91	-	91
VII. Feet	1	-	1	30	-	30	-	-	-	-	-	-	11	-	11	-	-	-	-	-	-	1	-	1	-	-	43	-	43
VIII. Multiple locations	-	-	-	1	1	2	-	-	-	1	1	2	2	-	2	-	-	-	-	-	-	-	-	-	-	-	4	2	6
IX. Not specified	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TOTAL	9	-	9	179	3	182	12	-	12	6	2	8	146	-	146	1	-	1	-	-	-	10	1	11	-	-	363	6	369

(1) Number of hours worked by pit staff and employees of contractor firms who belong to a miner's social insurance scheme

(2) including complications.

(3) The shoulders and the wrists are included under „upper limbs“.

(4) The hips and the ankles are included under „Lower limbs“.

(5) Calendar days.

**DETAILED BREAKDOWN OF VICTIMS ACCORDING TO LOCATION
AND NATURE OF INJURY AND PERIOD OF INCAPACITY**

(Frequency rates)

COUNTRY BELGIUM
COAL-FIELD TOTAL

YEAR 1974
MAN-HOURS WORKED (1) 2.734,496

NATURE OF THE INJURY	Amputations and enucleations 1			Fractures with or without dislocation 2			Luxations, twist and sprains 3			Concussion and internal injury 4			Open wounds contusion and muscular abrasions 5			Burns and harmful effects of electricity and radiation 6			Poisoning and suffocation 7			Multiple injuries of those not specified (2) 8			TOTAL 9				
	> 56 days (3)	Fatal acci- dents	total	> 56 days (3)	Fatal acci- dents	total	> 56 days (3)	Fatal acci- dents	total	> 56 days (3)	Fatal acci- dents	total	> 56 days (3)	Fatal acci- dents	total	> 56 days (3)	Fatal acci- dents	total	> 56 days (3)	Fatal acci- dents	total	4 to 20 days (3)	21 to 56 days (3)	> 56 days (3)	Fatal acci- dents	total			
LOCATION OF THE INJURY																													
I. Head and neck	-	-	-	0,3	-	0,4	-	-	-	-	-	-	0,2	-	0,2	-	-	-				-	-	-	-	-	0,6	-	0,7
II. Eyes	-	-	-							-	-	-	0,2	-	0,2	-	-	-				-	-	-	-	-	0,2	-	0,2
III. Trunk	-	-	-	0,6	-	0,6	-	-	-	-	-	0,1	0,3	-	0,3	-	-	-				-	-	-	-	-	1,2	-	1,2
IV. Upper limbs (excluding the hands) (3)	-	-	-	0,6	-	0,6	-	-	-				0,4	-	0,4	-	-	-				-	-	-	-	-	1,2	-	1,2
V. Hands	0,1	-	0,1	2,1	-	2,1	-	-	-				2,0	-	2,0	-	-	-				-	-	-	-	-	4,4	-	4,4
VI. Lower limbs (excluding feet) (4)	-	-	-	1,3	-	1,3	0,2	-	0,2				1,3	-	1,3	-	-	-				0,2	-	0,2	-	-	3,1	-	3,1
VII. Feet	-	-	-	1,0	-	1,0	-	-	-				0,3	-	0,3	-	-	-				-	-	-	-	-	1,4	-	1,4
VIII. Multiple locations	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				-	-	-	-	-	0,1	-	0,2
IX. Not specified																-	-	-				-	-	-	-	-	-	-	-
TOTAL	0,3	-	0,3	6,2	0,1	6,3	0,4	-	0,4	0,2	-	0,2	5,0	-	5,0	-	-	-	-	-	-	0,3	-	0,3	-	-	12,5	0,2	12,7

(1) Number of hours worked by pit staff and employees of contractor firms who belong to a miner's social insurance scheme.

(2) Including complications.

(3) The shoulders and the wrists are included under „upper limbs“.

(4) The hips and the ankles are included under „Lower limbs“.

(5) Calendar days.

MINES SAFETY AND HEALTH COMMISSION

Common Statistics on victims of accidents underground in coal mines

DETAILED BREAKDOWN OF ACCIDENT VICTIMS ACCORDING TO CAUSE AND SITE OF ACCIDENT AND PERIOD OF INCAPACITY

(absolute figures)

YEAR 1974
MAN-HOURS WORKED (1) 40 401 696

Table 1a

COUNTRY FRANCE
COAL-FIELD NORTH

SITE OF THE ACCIDENT CAUSES OF ACCIDENTS	Production faces 1					Headings excluding shafts and staple-pits 2					Shafts and staple-pits 3					Other places 4					Total of accidents underground 5					Group accidents (2) 6			
	Period of incapacity	4 to 20 days (3)	21 to 56 days (3)	> 56 days (3)	Fatal accidents	total	4 to 20 days (3)	21 to 56 days (3)	> 56 days (3)	Fatal accidents	total	4 to 20 days (3)	21 to 56 days (3)	> 56 days (3)	Fatal accidents	total	4 to 20 days (3)	21 to 56 days (3)	> 56 days (3)	Fatal accidents	total	4 to 20 days (3)	21 to 56 days (3)	> 56 days (3)	Fatal accidents	total	56 days (3)	Fatal accidents	total
I. FALLS OF GROUNDS AND ROCKS		862	283	101	3	1 249	397	139	40	-	576	2	3	-	-	2	153	57	11	2	223	1 414	479	152	5	2 050	-	-	-
II. TRANSPORT, TOTAL		24	19	6	1	50	56	37	21	1	115	8	11	5	-	24	118	76	39	5	238	206	143	71	7	427	-	-	-
a) Continuous Transport		12	13	5	1	31	17	7	6	-	30	-	-	-	-	-	12	3	2	17	41	-	23	13	1	78	-	-	-
b) Discontinuous Transport		12	6	1	-	19	39	30	15	1	85	8	11	5	-	24	106	73	37	5	221	165	120	58	6	349	-	-	-
III. FALLS AND MOVEMENT OF THE VICTIM, TOTAL		155	68	29	-	252	235	100	40	-	375	19	7	3	1	30	361	171	68	-	600	770	346	140	1	1 257	-	-	-
a) while moving about the mine		123	56	27	-	206	204	79	31	-	316	17	4	1	-	22	300	134	55	-	489	646	273	114	-	1 033	-	-	-
b) in the course of other activities		32	12	2	-	29	29	21	9	-	58	2	3	2	1	8	61	37	13	-	111	124	73	26	1	224	-	-	-
IV. MACHINES, TOOLS AND SUPPORTS TOTAL		507	187	44	2	740	268	97	29	-	394	5	3	1	-	9	226	91	22	-	339	1 006	378	96	2	1 482	-	-	-
a) Machines		189	67	20	1	277	144	44	18	-	206	3	2	-	-	5	105	44	11	-	160	441	157	49	1	648	-	-	-
b) Tools		297	112	22	-	431	105	43	10	-	158	2	1	1	-	0	41	101	38	10	149	505	194	43	-	742	-	-	-
c) Supports		21	8	2	1	32	19	10	1	-	30	-	-	-	-	-	-	20	9	1	30	60	27	4	1	92	-	-	-
V. FALLS OF OBJECTS		656	247	71	-	974	397	158	50	-	605	16	8	4	3	28	444	207	52	1	704	1 513	620	177	1	2 311	-	-	-
VI. EXPLOSIVES		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VII. IGNITIONS OR EXPLOSIONS OF FIREDAMP AND COAL DUST		-	-	-	11	11	-	-	-	7	7	-	-	-	-	-	1	-	6	24	31	1	-	6	42	49	5	42	47
VIII. OUTBURSTS OF GAS, DE-OXYGENATION, SUFFOCATION OR POISONING BY NATURAL GASES (CO ₂ , CH ₄ , CO, H ₂ S), TOTAL		2	-	-	-	2	1	1	-	-	2	-	-	-	-	-	-	-	-	-	-	3	1	-	-	4	-	-	-
a) Outbursts of Gas		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
b) De-oxygenation and Poisoning by natural Gases		2	-	-	-	2	1	1	-	-	2	-	-	-	-	-	-	-	-	-	-	3	1	-	-	4	-	-	-
IX. HEATINGS OR FIRES		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	1	-	-	1	-	1	-	-	-
X. INRUSHES		4	-	-	-	4	1	-	-	-	1	-	-	-	-	-	2	-	-	-	2	7	-	-	-	7	-	-	-
XI. ELECTRICITY		-	-	-	-	-	2	-	-	-	2	-	-	-	-	-	-	2	-	-	2	2	2	-	-	4	-	-	-
XII. OTHER CAUSES		117	22	9	-	148	97	12	-	-	109	11	2	1	3	14	122	14	11	-	147	347	50	21	-	418	-	-	-
TOTAL		2 327	826	260	17	3 430	1 454	544	180	8	2 186	611	311	141	1	107	1 427	618	210	32	2 287	5 269	2 019	664	58	8 010	5	42	47

(1) Number of hours worked by pit staff and employees of contractor firms who belong to a miners' social insurance scheme

(2) Accidents involving more than five casualties (i.e. who either died or were unable to resume work underground for at least eight weeks)

(3) Calendar days.

MINES SAFETY AND HEALTH COMMISSION

Common Statistics on victims of accidents underground in coal mines

DETAILED BREAKDOWN OF ACCIDENT VICTIMS ACCORDING TO CAUSE AND SITE OF ACCIDENT AND PERIOD OF INCAPACITY

(absolute figures)

YEAR 1974
MAN-HOURS WORKED (1) 40 401 696

Table 1b

SITE OF THE ACCIDENT CAUSES OF ACCIDENTS	Production faces 1					Headings excluding shafts and staple-pits 2					Shafts and staple-pits 3					Other places 4					Total of accidents underground 5					Group accidents (2) 6		
	Period of incapacity																											
	4 to 20 days (3)	21 to 56 days (3)	> 56 days (3)	Fatal accidents	total	4 to 20 days (3)	21 to 56 days (3)	> 56 days (3)	Fatal accidents	total	4 to 20 days (3)	21 to 56 days (3)	> 56 days (3)	Fatal accidents	total	4 to 20 days (3)	21 to 56 days (3)	> 56 days (3)	Fatal accidents	total	4 to 20 days (3)	21 to 56 days (3)	> 56 days (3)	Fatal accidents	total	56 days (3)	Fatal accidents	total
I. FALLS OF GROUNDS AND ROCKS	21.34	7.00	2.50	0.07	30.91	9.83	3.44	0.99	0.00	14.26	0.05	-	-	-	0.05	3.79	1.41	0.27	0.05	5.52	35.00	11.86	3.76	0.12	50.74	-	-	-
II. TRANSPORT, TOTAL	0.59	0.47	0.15	0.02	1.24	1.39	0.92	0.52	0.02	2.85	0.20	0.27	0.12	-	0.59	2.92	1.88	0.97	0.12	5.89	5.10	3.54	1.76	0.17	10.57	-	-	-
a) Continuous Transport	0.30	0.32	0.12	0.02	0.77	0.42	0.17	0.15	-	0.74	-	-	-	-	0.30	0.07	0.05	-	0.42	1.01	0.57	0.32	0.02	1.93	-	-	-	
b) Discontinuous Transport	0.30	0.15	0.02	-	0.47	0.97	0.74	0.37	0.02	2.10	0.20	0.27	0.12	-	0.59	2.62	1.81	0.92	0.12	5.47	4.08	2.97	1.44	0.15	8.64	-	-	-
III. FALLS AND MOVEMENT OF THE VICTIM, TOTAL	3.84	1.68	0.72	-	6.24	5.82	2.48	0.99	-	9.28	0.47	0.17	0.07	0.02	0.74	8.94	4.23	1.68	-	14.85	19.06	9.56	3.47	0.02	31.11	-	-	-
a) while moving about the mine	3.04	1.39	0.67	-	5.10	5.10	1.96	0.77	-	7.82	0.42	0.10	0.02	-	0.54	7.43	3.32	1.36	-	12.10	15.99	6.76	2.82	-	25.57	-	-	-
b) in the course of other activities	0.79	0.30	0.05	-	1.14	0.72	0.52	0.22	-	1.46	0.05	0.07	0.05	0.02	0.20	1.51	0.92	0.32	-	2.75	3.07	1.81	0.64	0.02	5.54	-	-	-
IV. MACHINES, TOOLS AND SUPPORTS TOTAL	12.55	4.63	1.09	0.05	18.32	6.63	2.40	0.72	-	9.75	0.12	0.07	0.02	-	0.22	5.59	2.25	0.54	-	8.39	24.90	9.36	2.38	0.05	36.68	-	-	-
a) Machines	4.68	1.66	0.50	0.02	6.86	3.56	1.09	0.45	-	5.10	0.07	0.05	-	-	0.12	2.60	1.09	0.27	-	3.96	10.92	3.89	1.21	0.02	16.04	-	-	-
b) Tools	7.35	2.77	0.54	-	10.67	2.60	1.06	0.25	-	3.91	0.05	0.02	0.02	-	0.10	2.50	0.94	0.25	-	3.69	12.50	4.80	1.06	-	18.37	-	-	-
c) Supports	0.52	0.20	0.05	0.02	0.79	0.47	0.25	0.02	-	0.74	-	-	-	-	0.50	0.22	0.02	-	0.74	1.49	0.67	0.10	0.02	2.28	-	-	-	
V. FALLS OF OBJECTS	16.24	6.11	1.76	-	24.11	9.83	3.91	1.24	-	14.97	0.40	0.20	0.10	-	0.69	10.99	5.12	1.29	0.02	17.43	37.45	15.35	4.38	0.02	57.20	-	-	-
VI. EXPLOSIVES	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VII. IGNITIONS OR EXPLOSIONS OF FIREDAMP AND COAL DUST	-	-	-	0.27	0.27	-	0.30	-	0.17	0.17	-	-	-	-	-	-	0.02	0.15	0.59	0.77	0.02	-	-	0.15	1.21	0.12	1.04	1.16
VIII. OUTBURSTS OF GAS, DE-OXYGENATION, SUFFOCATION OR POISONING BY NATURAL GASES (CO ₂ , CH ₄ , CO, H ₂ S), TOTAL	0.05	-	-	-	0.05	0.02	0.02	-	-	0.05	-	-	-	-	-	-	-	-	-	-	0.07	0.02	-	-	0.10	-	-	-
a) Outbursts of Gas	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
b) De-oxygenation and Poisoning by natural Gases	0.05	-	-	-	0.05	0.02	0.02	-	-	0.05	-	-	-	-	-	-	-	-	-	-	0.07	0.02	-	-	0.10	-	-	-
IX. HEATINGS OR FIRES	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.2	-	0.2	-	-	0.02	-	0.02	-	-	-
X. INRUSHES	0.10	0.0	-	0.10	0.02	-	-	-	0.02	-	-	-	-	-	0.05	-	-	0.5	0.17	-	-	-	0.17	-	0.17	-	-	-
XI. ELECTRICITY	-	-	-	-	-	0.05	-	-	-	-	-	-	-	-	0.05	-	-	-	0.05	0.5	-	-	0.10	-	0.10	-	-	-
XII. OTHER CAUSES	2.90	0.54	0.22	-	3.66	2.40	0.30	-	-	2.70	0.27	0.05	0.02	0.03	0.35	3.02	0.35	0.27	-	3.64	8.59	1.24	0.52	-	10.35	-	-	-
TOTAL	57.60	20.44	6.44	0.42	84.90	35.99	13.46	4.40	0.20	54.11	1.51	0.77	0.35	0.02	2.65	35.32	15.30	5.20	0.79	56.61	130.42	49.97	16.43	1.44	198.26	0.12	1.04	1.16

(1) Number of hours worked by pit staff and employees of contractor firms who belong to a miners' social insurance scheme.

(2) Accidents involving more than five casualties (i.e. who either died or were unable to resume work underground for at least eight weeks)

(3) Calendar days.

DETAILED BREAKDOWN OF VICTIMS ACCORDING TO LOCATION
AND NATURE OF INJURY AND PERIOD OF INCAPACITY

Table 2a

COUNTRY FRANCE
COAL-FIELD NORTH

(absolute figures)

YEAR 1974
MAN-HOURS WORKED (*) 40.401.596

NATURE OF THE INJURY	Amputations and enucleations 1			Fractures with or without dislocation 2			Luxations, twist and sprains 3			Concussion and internal injury 4			Open wounds contusion and muscular abrasions 5			Burns and harmful effects of electricity and radiation 6			Poisoning and suffocation 7			Multiple injuries of those not specified (2) 8			TOTAL 9				
	> 56 days (3)	Fatal accidents	total	> 56 days (3)	Fatal accidents	total	> 56 days (3)	Fatal accidents	total	> 56 days (3)	Fatal accidents	total	> 56 days (3)	Fatal accidents	total	> 56 days (3)	Fatal accidents	total	> 56 days (3)	Fatal accidents	total	4 to 20 days (3)	21 to 56 days (3)	> 56 days (3)	Fatal accidents	total			
LOCATION OF THE INJURY																													
I. Head and neck	-	-	-	13	6	19	-	-	-	-	-	-	16	-	16	-	-	-	-	-	-	1	-	1	384	76	30	6	496
II. Eyes	-	-	-	-	-	-	-	-	-	1	-	1	6	-	6	-	-	-	-	-	-	-	-	481	26	7	-	514	
III. Trunk	1	-	1	34	4	38	16	-	16	2	1	3	6	-	6	-	-	-	-	-	2	-	2	649	290	61	5	1.005	
IV. Upper limbs (excluding the hands) (3)	1	-	1	39	-	39	7	-	7	-	-	-	26	-	26	-	-	-	-	-	1	-	1	698	151	74	-	923	
V. Hands	19	-	19	117	-	117	2	-	2	-	-	-	57	-	57	-	-	-	-	-	1	-	1	1.721	878	196	-	2.795	
VI. Lower limbs (excluding feet) (4)	1	-	1	73	-	73	32	-	32	-	-	-	101	-	101	-	-	-	-	-	-	-	779	335	207	-	1.321		
VII. Feet	1	-	1	44	-	44	4	-	4	-	-	-	10	-	10	-	-	-	-	-	-	-	415	210	59	-	684		
VIII. Multiple locations	-	-	-	8	1	9	-	-	-	-	-	-	6	-	6	5	42	47	-	-	-	7	3	10	137	52	26	46	261
IX. Not specified	-	-	-	-	-	-	-	-	-	-	-	-	1	-	1	-	-	-	1	-	1	2	1	3	5	1	4	1	11
TOTAL	23	-	23	328	11	339	61	-	61	3	1	4	229	-	229	47	42	47	1	-	1	14	4	18	5.269	2.019	664	58	8.010

(1) Number of hours worked by pit staff and employees of contractor firms who belong to a miner's social insurance scheme.

(2) Including complications.

(3) The shoulders and the wrists are included under "upper limbs".

(4) The hips and the ankles are included under "Lower limbs".

(5) Calendar days.

MINES SAFETY AND HEALTH COMMISSION

Common Statistics on victims of accidents underground in coal mines

DETAILED BREAKDOWN OF VICTIMS ACCORDING TO LOCATION AND NATURE OF INJURY AND PERIOD OF INCAPACITY

Table 2b

(Frequency rates)

COUNTRY FRANCE
COAL-FIELD NORTH

YEAR 1974
MAN-HOURS WORKED (1) 40.401.596

NATURE OF THE INJURY	Amputations and enucleations 1			Fractures with or without dislocation 2			Luxations, twist and sprains 3			Concussion and internal injury 4			Open wounds contusion and muscular abrasions 5			Burns and harmful effects of electricity and radiation 6			Poisoning and suffocation 7			Multiple injuries of those not specified (2) 8			TOTAL 9				
	> 56 days (3)	Fatal accidents	total	> 56 days (3)	Fatal accidents	total	> 56 days (3)	Fatal accidents	total	> 56 days (3)	Fatal accidents	total	> 56 days (3)	Fatal accidents	total	> 56 days (3)	Fatal accidents	total	> 56 days (3)	Fatal accidents	total	> 56 days (3)	Fatal accidents	total	4 to 20 days (4)	21 to 56 days (5)	> 56 days (3)	Fatal accidents	total
I. Head and neck	-	-	-	0,32	0,15	0,47	-	-	-	-	-	-	3,40	-	3,40	-	-	-	-	-	-	0,32	-	0,02	9,50	1,88	3,74	0,15	12,28
II. Eyes	-	-	-	-	-	-	-	-	-	0,02	-	0,02	0,15	-	0,15	-	-	-	-	-	-	-	-	-	11,91	0,64	0,17	-	12,72
III. Trunk	0,02	-	0,02	0,84	0,10	0,94	0,40	-	0,40	0,05	0,02	0,07	0,15	-	0,15	-	-	-	-	-	-	0,05	-	0,05	16,06	7,18	1,51	0,12	24,88
IV. Upper limbs (excluding the hands) (3)	0,02	-	0,02	0,97	-	0,97	0,17	-	0,17	-	-	-	0,64	0,03	0,64	-	-	-	-	-	-	0,02	-	0,02	17,28	3,74	1,83	-	22,85
V. Hands	0,47	-	0,47	2,90	-	2,90	0,05	-	0,05	-	-	-	1,41	-	1,41	-	-	-	-	-	-	0,02	-	0,02	42,60	21,73	4,85	-	69,18
VI. Lower limbs (excluding feet) (4)	0,02	-	0,02	1,81	-	1,81	0,79	-	0,79	-	-	-	2,50	-	2,50	-	-	-	-	-	-	-	-	-	19,28	8,29	5,12	-	32,70
VII. Feet	0,02	-	0,02	1,09	-	1,09	0,10	-	0,10	-	-	-	0,25	-	0,25	-	-	-	-	-	-	-	-	-	10,27	5,20	1,46	-	16,93
VIII. Multiple locations	-	-	-	0,20	0,02	0,22	-	-	-	-	-	-	0,15	-	0,15	0,12	1,04	1,16	-	-	-	0,17	0,07	0,25	3,39	1,29	0,64	1,14	0,46
IX. Not specified	-	-	-	-	-	-	-	-	-	-	-	-	0,02	-	0,02	-	-	-	0,02	-	0,02	0,05	0,02	0,07	0,12	0,02	0,10	0,02	0,27
TOTAL	0,57	-	0,57	8,12	0,27	8,39	1,51	-	1,51	0,07	0,02	0,10	5,67	-	5,67	0,12	1,04	1,16	0,02	-	0,02	0,35	0,10	0,45	130,42	49,97	16,43	1,44	198,26

(1) Number of hours worked by pit staff and employees of contractor firms who belong to a miner's social insurance scheme.

(2) Including complications.

(3) The shoulders and the wrists are included under „upper limbs“.

(4) The hips and the ankles are included under „Lower limbs“.

(5) Calendar days.

MINES SAFETY AND HEALTH COMMISSION

Common Statistics on victims of accidents underground in coal mines

DETAILED BREAKDOWN OF ACCIDENT VICTIMS ACCORDING TO CAUSE AND SITE OF ACCIDENT AND PERIOD OF INCAPACITY

(absolute figures)

COUNTRY FRANCE
COAL-FIELD LORRAINE

YEAR 1974
MAN-HOURS WORKED (1) 18 594 856

Table 1a

SITE OF THE ACCIDENT CAUSES OF ACCIDENTS	Production faces 1					Headings excluding shafts and staple-pits 2					Shafts and staple-pits 3					Other places 4					Total of accidents underground 5					Group accidents (2) 6			
	Period of incapacity	4 to 20 days (3)	21 to 56 days (3)	> 56 days (3)	Fatal accidents	total	4 to 20 days (3)	21 to 56 days (3)	> 56 days (3)	Fatal accidents	total	4 to 20 days (3)	21 to 56 days (3)	> 56 days (3)	Fatal accidents	total	4 to 20 days (3)	21 to 56 days (3)	> 56 days (3)	Fatal accidents	total	4 to 20 days (3)	21 to 56 days (3)	> 56 days (3)	Fatal accidents	total	56 days (3)	Fatal accidents	total
I. FALLS OF GROUNDS AND ROCKS		451	253	106	3	813	115	56	19	-	190	-	-	-	-	11	10	3	-	24	577	319	128	3	1 027	-	-	-	
II. TRANSPORT, TOTAL		51	29	22	-	102	9	12	7	-	28	2	2	1	-	5	36	49	23	-	108	98	92	53	-	243	-	-	-
a) Continuous Transport		23	19	14	-	56	2	3	2	-	7	-	-	-	-	3	5	5	-	13	28	27	21	-	76	-	-	-	
b) Discontinuous Transport		28	10	8	-	46	7	9	5	-	21	2	2	1	-	5	33	44	18	-	95	70	65	32	-	167	-	-	-
III. FALLS AND MOVEMENT OF THE VICTIM, TOTAL		320	211	40	-	571	71	55	10	-	136	8	7	-	-	15	183	135	30	-	348	582	408	80	-	1 070	-	-	-
a) while moving about the mine		276	163	31	-	470	66	46	8	-	120	8	5	-	-	13	158	106	23	-	287	508	320	62	-	890	-	-	-
b) in the course of other activities		44	48	9	-	101	5	9	2	-	16	-	2	-	-	2	25	29	7	-	61	74	88	18	-	180	-	-	-
IV. MACHINES, TOOLS AND SUPPORTS TOTAL		322	163	44	-	529	77	52	8	-	137	1	-	-	-	1	45	29	11	-	85	445	244	63	-	752	-	-	-
a) Machines		36	19	16	-	71	9	5	5	-	19	-	-	-	-	4	8	3	-	15	49	32	24	-	105	-	-	-	
b) Tools		189	76	20	-	285	55	34	1	-	90	1	-	-	-	1	40	21	8	-	69	285	131	29	-	445	-	-	-
c) Supports		97	68	8	-	173	13	13	2	-	28	-	-	-	-	1	-	-	-	-	1	111	81	10	-	202	-	-	-
V. FALLS OF OBJECTS		377	239	63	1	680	81	53	6	-	140	2	3	-	-	5	164	106	39	-	309	624	401	108	1	1 134	-	-	-
VI. EXPLOSIVES		1	1	-	-	2	-	-	-	-	-	-	-	-	-	2	-	-	-	-	2	3	1	-	-	4	-	-	-
VII. IGNITIONS OR EXPLOSIONS OF FREDAMP AND COAL DUST		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VIII. OUTBURSTS OF GAS, DE-OXYGENATION, SUFFOCATION OR POISONING BY NATURAL GASES (CO ₂ , CH ₄ , CO, H ₂ S), TOTAL		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
a) Outbursts of Gas		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
b) De-oxygenation and Poisoning by natural Gases		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IX. HEATINGS OR FIRES		1	-	-	-	1	1	-	-	-	1	-	-	-	-	-	-	-	-	-	-	2	-	-	-	2	-	-	-
X. INRUSHES		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
XI. ELECTRICITY		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	1	-	1	-	-	1	-	-	-
XII. OTHER CAUSES		58	14	3	-	75	23	7	2	-	32	4	1	-	-	5	32	9	2	-	43	117	31	7	-	155	-	-	-
TOTAL		1 581	910	278	4	2 773	377	235	52	-	664	17	13	1	-	31	473	339	108	-	920	2 448	1 497	439	4	4 388	-	-	-

(1) Number of hours worked by pit staff and employees of contractor firms who belong to a miners' social insurance scheme.

(2) Accidents involving more than five casualties (i.e. who either died or were unable to resume work underground for at least eight weeks).

(3) Calendar days

MINES SAFETY AND HEALTH COMMISSION

Common Statistics on victims of accidents underground in coal mines

DETAILED BREAKDOWN OF ACCIDENT VICTIMS ACCORDING TO CAUSE AND SITE OF ACCIDENT AND PERIOD OF INCAPACITY

(frequency rates)

COUNTRY FRANCE
COAL-FIELD LORRAINE

YEAR 1974
MAN-HOURS WORKED (1) 18 594 856

Table 1b

SITE OF THE ACCIDENT CAUSES OF ACCIDENTS	Production faces 1					Headings excluding shafts and staple-pits 2					Shafts and staple-pits 3					Other places 4					Total of accidents underground 5					Group accidents (2) 6			
	Period of incapacity																												
	4 to 20 days (2)	21 to 56 days (2)	> 56 days (2)	Fatal accidents	total	4 to 20 days (2)	21 to 56 days (2)	> 56 days (2)	Fatal accidents	total	4 to 20 days (2)	21 to 56 days (2)	> 56 days (2)	Fatal accidents	total	4 to 20 days (2)	21 to 56 days (2)	> 56 days (2)	Fatal accidents	total	4 to 20 days (2)	21 to 56 days (2)	> 56 days (2)	Fatal accidents	total	56 days (2)	Fatal accidents	total	
I FALLS OF GROUNDS AND ROCKS	24.25	13.61	5.70	0.16	43.72	6.18	3.01	1.02	-	10.22	-	-	-	-	0.59	0.54	0.16	-	1.29	31.03	17.16	6.88	0.16	55.23	-	-	-		
II TRANSPORT, TOTAL	2.74	1.56	1.18	-	5.49	0.48	0.65	0.38	-	1.51	0.11	0.11	0.05	-	0.27	1.94	2.64	1.24	-	5.81	5.27	4.95	2.85	-	13.07	-	-	-	
a) Continuous Transport	1.24	1.02	0.75	-	3.01	0.11	0.16	0.11	-	0.38	-	-	-	-	0.16	0.27	0.27	-	0.70	1.51	1.45	1.13	-	4.09	-	-	-		
b) Discontinuous Transport	1.51	0.54	0.43	-	2.47	0.38	0.48	0.27	-	1.13	0.11	0.11	0.05	-	0.27	1.77	2.37	0.97	-	5.11	3.76	3.50	1.72	-	8.98	-	-	-	
III FALLS AND MOVEMENT OF THE VICTIM, TOTAL	17.21	11.35	2.15	-	30.71	3.82	2.96	0.54	-	7.31	0.43	0.38	-	-	0.81	9.84	7.26	1.61	-	18.71	31.30	21.94	4.30	-	57.54	-	-	-	
a) while moving about the mine	14.84	8.77	1.67	-	25.28	3.55	2.47	0.43	-	6.45	0.43	0.27	-	-	0.70	8.50	5.70	1.24	-	15.43	27.32	17.21	3.33	-	47.86	-	-	-	
b) in the course of other activities	2.37	2.58	0.48	-	5.43	0.27	0.48	0.11	-	0.86	-	0.11	-	-	0.11	1.34	1.56	0.38	-	3.28	3.98	4.73	0.97	-	9.68	-	-	-	
IV MACHINES, TOOLS AND SUPPORTS TOTAL	17.32	8.77	2.37	-	28.45	4.14	2.80	0.43	-	7.37	0.05	-	-	-	0.05	2.42	1.56	0.59	-	4.57	23.93	13.12	3.39	-	40.44	-	-	-	
a) Machines	1.94	1.02	0.86	-	3.82	0.48	0.27	0.27	-	1.02	-	-	-	-	0.22	0.43	0.16	-	0.81	2.64	1.72	1.29	-	5.65	-	-	-		
b) Tools	10.16	4.09	1.08	-	15.33	2.96	1.83	0.05	-	4.84	0.05	-	-	-	0.05	2.15	1.13	0.43	-	3.71	15.33	7.04	1.56	-	23.93	-	-	-	
c) Supports	5.22	3.66	0.43	-	9.30	0.70	0.70	0.11	-	1.51	-	-	-	-	0.05	-	-	-	-	0.05	5.97	4.36	0.54	-	10.86	-	-	-	
V FALLS OF OBJECTS	20.27	12.85	3.39	0.05	36.57	4.36	2.85	0.32	-	7.53	0.11	0.16	-	-	0.27	8.82	5.70	2.10	-	16.62	33.56	21.57	5.81	0.05	60.98	-	-	-	
VI EXPLOSIVES	0.05	0.05	-	-	0.11	-	-	-	-	-	-	-	-	-	-	0.11	-	-	-	-	0.11	0.16	0.05	-	-	0.22	-	-	-
VII IGNITIONS OR EXPLOSIONS OF FIREDAMP AND COAL DUST	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
VIII OUTBURSTS OF GAS, DE-OXYGENATION, SUFFOCATION OR POISONING BY NATURAL GASES (CO ₂ , CH ₄ , CO, H ₂ S), TOTAL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
a) Outbursts of Gas	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
b) De-oxygenation and Poisoning by natural Gases	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
IX HEATINGS OR FIRES	0.05	-	-	-	0.05	0.05	-	-	-	0.05	-	-	-	-	-	-	-	-	-	-	0.11	-	-	-	0.11	-	-	-	
X INRUSHES	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
XI ELECTRICITY	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.05	-	-	-	0.05	-	0.05	-	-	0.05	-	-	-	
XII OTHER CAUSES	3.12	0.75	0.16	-	4.03	1.24	0.38	0.11	-	1.72	0.22	0.05	-	-	0.27	1.72	0.48	0.11	-	2.31	6.29	1.67	0.38	-	8.34	-	-	-	
TOTAL	85.02	48.94	14.95	0.22	49.13	20.27	12.64	2.80	-	35.71	0.91	0.70	0.05	-	1.67	25.44	18.23	5.81	-	49.48	131.65	80.51	23.61	0.22	235.98	-	-	-	

(1) Number of hours worked by pit staff and employees of contractor firms who belong to a miners' social insurance scheme

(2) Accidents involving more than five casualties (i.e. who either died or were unable to resume work underground for at least eight weeks)

(3) Calendar days

**MINES SAFETY AND HEALTH
COMMISSION**

Common Statistics on victims
of accidents underground in coal mines

**DETAILED BREAKDOWN OF VICTIMS ACCORDING TO LOCATION
AND NATURE OF INJURY AND PERIOD OF INCAPACITY**

Table 2a

COUNTRY : FRANCE
COAL-FIELD : LORRAINE

(absolute figures)

YEAR 1974
MAN-HOURS WORKED (1) 13.594.856

NATURE OF THE INJURY	Amputations and enucleations 1			Fractures with or without dislocation 2			Luxations, twist and sprains 3			Concussion and internal injury 4			Open wounds contusion and muscular abrasions 5			Burns and harmful effects of electricity and radiation 6			Poisoning and suffocation 7			Multiple injuries of those not specified (2) 8			TOTAL 9						
	> 56 days (3)	Fatal accidents	total	> 56 days (3)	Fatal accidents	total	> 56 days (3)	Fatal accidents	total	> 56 days (3)	Fatal accidents	total	> 56 days (3)	Fatal accidents	total	> 56 days (3)	Fatal accidents	total	> 56 days (3)	Fatal accidents	total	4 to 20 days (3)	21 to 56 days (3)	> 56 days (3)	Fatal accidents	total					
LOCATION OF THE INJURY																															
I. Head and neck	1	-	1	9	-	9	-	-	-	4	-	4	18	-	18	-	-	-	-	-	-	-	-	-	-	-	277	130	32	-	439
II. Eyes	-	-	-	-	-	-	-	-	-	-	-	-	4	-	4	-	-	-	-	-	-	-	-	-	-	-	242	19	4	-	265
III. Trunk	-	-	-	14	1	15	13	-	13	3	-	3	13	-	13	-	-	-	-	-	-	1	-	1	357	278	44	1	680		
IV. Upper limbs (excluding the hands) (3)	-	-	-	15	-	15	5	-	5	-	-	-	15	-	15	-	-	-	-	-	-	-	-	-	-	369	166	35	-	570	
V. Hands	10	-	10	76	-	76	10	-	10	-	-	-	47	-	47	1	-	1	-	-	-	1	-	1	550	480	145	-	1.175		
VI. Lower limbs (excluding feet) (4)	1	-	1	45	-	45	19	-	19	-	-	-	35	-	35	-	-	-	-	-	-	3	-	3	366	226	103	-	695		
VII. Feet	3	-	3	28	-	28	5	-	5	-	-	-	21	-	21	-	-	-	-	-	-	1	-	1	160	94	58	-	312		
VIII. Multiple locations	-	-	-	3	1	4	-	-	-	-	-	-	13	1	14	-	-	-	-	-	-	-	-	-	-	106	99	16	2	223	
IX. Not specified	-	-	-	-	-	-	-	-	-	-	-	-	1	-	1	-	-	-	-	1	1	1	-	1	21	5	2	1	29		
TOTAL	15	-	15	190	2	192	52	-	52	7	-	7	167	1	168	1	-	1	-	1	1	7	-	7	2.448	1.497	439	4	4.388		

(1) Number of hours worked by pit staff and employees of contractor firms who belong to a miner's social insurance scheme

(2) including complications.

(3) The shoulders and the wrists are included under „upper limbs“

(4) The hips and the ankles are included under „Lower limbs“.

(5) Calendar days.

MINES SAFETY AND HEALTH COMMISSION

Common Statistics on victims of accidents underground in coal mines

DETAILED BREAKDOWN OF VICTIMS ACCORDING TO LOCATION AND NATURE OF INJURY AND PERIOD OF INCAPACITY

Table 2b

COUNTRY : FRANCE
COAL-FIELD : LORRAINE

(Frequency rates)

YEAR 1974
MAN-HOURS WORKED (1) 18.594.856

NATURE OF THE INJURY	Amputations and enucleations 1			Fractures with or without dislocation 2			Luxations, twist and sprains 3			Concussion and internal injury 4			Open wounds contusion and muscular abrasions 5			Burns and harmful effects of electricity and radiation 6			Poisoning and suffocation 7			Multiple injuries of those not specified (2) 8			TOTAL 9												
	> 56 days (5)	Fatal accidents	total	> 56 days (5)	Fatal accidents	total	> 56 days (5)	Fatal accidents	total	> 56 days (5)	Fatal accidents	total	> 56 days (5)	Fatal accidents	total	> 56 days (5)	Fatal accidents	total	> 56 days (5)	Fatal accidents	total	4 to 20 days (5)	21 to 56 days (5)	> 56 days (5)	Fatal accidents	total											
LOCATION OF THE INJURY																																					
I. Head and neck	0,05	-	0,05	0,48	-	0,48	-	-	-	0,22	-	0,22	0,97	-	0,97	-	-	-	-	-	-	-	-	-	-	-	-	14,90	6,99	1,72	-	23,61					
II. Eyes	-	-	-	-	-	-	-	-	-	-	-	-	0,22	-	0,22	-	-	-	-	-	-	-	-	-	-	-	-	13,01	1,02	0,22	-	14,25					
III. Trunk	-	-	-	0,75	0,05	0,81	0,70	-	0,70	0,16	-	0,16	0,70	-	0,70	-	-	-	-	-	-	-	-	-	-	-	0,05	-	0,05	19,20	14,95	2,37	0,05	36,57			
IV. Upper limbs (excluding the hands) (2)	-	-	-	0,81	-	0,81	0,27	-	0,27	-	-	-	0,81	-	0,81	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	19,84	8,93	1,88	-	30,65
V. Hands	0,54	-	0,54	1,09	-	1,09	0,54	-	0,54	-	-	-	2,53	-	2,53	0,05	-	0,05	-	-	-	-	-	-	-	-	0,05	-	0,05	29,58	25,81	7,80	-	63,19			
VI. Lower limbs (excluding feet) (3)	0,05	-	0,05	2,42	-	2,42	1,02	-	1,02	-	-	-	1,88	-	1,88	-	-	-	-	-	-	-	-	-	-	-	0,16	-	0,16	19,68	12,15	5,54	-	37,38			
VII. Feet	0,16	-	0,16	1,51	-	1,51	0,27	-	0,27	-	-	-	1,13	-	1,13	-	-	-	-	-	-	-	-	-	-	-	0,05	-	0,05	8,60	5,06	3,12	-	16,78			
VIII. Multiple locations	-	-	-	0,16	0,05	0,22	-	-	-	-	-	-	0,70	0,05	0,75	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5,70	5,32	0,86	0,11	11,99
IX. Not specified	-	-	-	-	-	-	-	-	-	-	-	-	0,05	-	0,05	-	-	-	-	-	-	-	-	-	-	-	0,05	-	0,05	1,13	0,27	0,11	0,05	1,56			
TOTAL	0,81	-	0,81	10,22	0,11	10,33	2,80	-	2,80	0,38	-	0,38	8,98	0,05	9,03	0,05	-	0,05	-	0,05	-	0,05	-	0,05	-	0,38	-	0,38	131,65	80,51	23,61	0,22	235,98				

(1) Number of hours worked by pit staff and employees of contractor firms who belong to a miner's social insurance scheme.

(2) Including complications.

(3) The shoulders and the wrists are included under „upper limbs“.

(4) The hips and the ankles are included under „Lower limbs“.

(5) Calendar days.

DETAILED BREAKDOWN OF ACCIDENT VICTIMS ACCORDING TO CAUSE AND SITE OF ACCIDENT AND PERIOD OF INCAPACITY

(absolute figures)

YEAR 1974
MAN-HOURS WORKED (1) 13 803 443

Table 1a

COUNTRY FRANCE
COAL-FIELD CENTRE-MIDI

SITE OF THE ACCIDENT CAUSES OF ACCIDENTS	Production faces 1					Headings excluding shafts and staple-pits 2					Shafts and staple-pits 3					Other places 4					Total of accidents underground 5					Group accidents (2) 6		
	Period of incapacity																											
	4 to 20 days (3)	21 to 56 days (3)	> 56 days (3)	Fatal accidents	total	4 to 20 days (3)	21 to 56 days (3)	> 56 days (3)	Fatal accidents	total	4 to 20 days (3)	21 to 56 days (3)	> 56 days (3)	Fatal accidents	total	4 to 20 days (3)	21 to 56 days (3)	> 56 days (3)	Fatal accidents	total	4 to 20 days (3)	21 to 56 days (3)	> 56 days (3)	Fatal accidents	total	56 days (3)	Fatal accidents	total
I. FALLS OF GROUNDS AND ROCKS	58	68	29	-	155	43	35	11	-	89	1	-	-	-	1	30	30	9	-	69	132	133	49	-	314	-	-	-
II. TRANSPORT, TOTAL	8	15	8	-	31	9	3	2	-	14	6	6	-	-	12	41	60	38	2	141	64	84	48	2	198	-	-	-
a) Continuous Transport	8	15	5	-	28	2	1	1	-	4	1	-	-	-	1	14	24	13	2	53	25	40	19	2	86	-	-	-
b) Discontinuous Transport	-	-	3	-	3	7	2	1	-	10	5	6	-	-	11	27	36	25	-	88	39	44	29	-	112	-	-	-
III. FALLS AND MOVEMENT OF THE VICTIM, TOTAL	26	38	8	-	72	22	25	9	-	56	4	3	3	-	10	124	170	59	-	353	176	236	79	-	491	-	-	-
a) while moving about the mine	16	25	6	-	47	15	17	8	-	40	1	-	-	-	1	75	118	36	-	229	107	160	50	-	317	-	-	-
b) in the course of other activities	10	13	2	-	25	7	8	1	-	16	3	3	3	-	9	49	52	23	-	124	69	76	29	-	174	-	-	-
IV. MACHINES, TOOLS AND SUPPORTS TOTAL	63	107	26	-	196	42	26	7	-	75	6	-	-	-	6	84	73	25	-	182	195	206	58	-	459	-	-	-
a) Machines	3	3	2	-	8	5	1	-	-	6	1	-	-	-	1	10	5	3	-	18	19	9	5	-	33	-	-	-
b) Tools	22	31	10	-	63	23	13	4	-	40	4	-	-	-	4	41	40	11	-	92	90	84	25	-	199	-	-	-
c) Supports	38	73	14	-	125	14	12	3	-	29	1	-	-	-	1	33	28	11	-	72	86	113	28	-	227	-	-	-
V. FALLS OF OBJECTS	68	85	25	-	178	46	30	10	-	86	1	5	1	-	7	138	146	52	-	336	254	266	88	-	608	-	-	-
VI. EXPLOSIVES	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VII. IGNITIONS OR EXPLOSIONS OF FIREDAMP AND COAL DUST	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VIII. OUTBURSTS OF GAS, DE-OXYGENATION, SUFFOCATION OR POISONING BY NATURAL GASES (CO ₂ , CH ₄ , CO, H ₂ S), TOTAL	5	-	-	-	5	-	-	-	-	-	-	-	-	-	-	2	-	-	-	2	7	-	-	-	7	-	-	-
a) Outbursts of Gas	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
b) De-oxygenation and Poisoning by natural Gases	5	-	-	-	5	-	-	-	-	-	-	-	-	-	-	2	-	-	-	2	7	-	-	-	7	-	-	-
IX. HEATINGS OR FIRES	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	1	1	3	1	-	1	1	3	-	-	-
X. INRUSHES	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
XI. ELECTRICITY	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2	1	-	5	2	2	1	-	5	-	-	-
XII. OTHER CAUSES	22	13	5	-	40	14	1	2	-	17	2	3	-	-	5	25	21	11	-	57	63	38	18	-	119	-	-	-
TOTAL	250	326	101	-	677	176	120	41	-	337	20	17	4	-	41	447	502	196	3	1148	894	965	342	3	2 204	-	-	-

(1) Number of hours worked by pit staff and employees of contractor firms who belong to a miners' social insurance scheme

(2) Accidents involving more than five casualties (i.e. who either died or were unable to resume work underground for at least eight weeks)

(3) Calendar days.

MINES SAFETY AND HEALTH COMMISSION

Common Statistics on victims of accidents underground in coal mines

DETAILED BREAKDOWN OF ACCIDENT VICTIMS ACCORDING TO CAUSE AND SITE OF ACCIDENT AND PERIOD OF INCAPACITY

(frequency rates)

COUNTRY FRANCE
COAL-FIELD CENTRE-MIDI

YEAR 1974
MAN-HOURS WORKED (1) 13 803 443

Table 1b

SITE OF THE ACCIDENT CAUSES OF ACCIDENTS	Production faces 1					Headings excluding shafts and staple-pits 2					Shafts and staple-pits 3					Other places 4					Total of accidents underground 5					Group accidents (2) 6		
	Period of incapacity	4 to 20 days (3)	21 to 56 days (3)	> 56 days (3)	Fatal accidents	total	4 to 20 days (3)	21 to 56 days (3)	> 56 days (3)	Fatal accidents	total	4 to 20 days (3)	21 to 56 days (3)	> 56 days (3)	Fatal accidents	total	4 to 20 days (3)	21 to 56 days (3)	> 56 days (3)	Fatal accidents	total	4 to 20 days (3)	21 to 56 days (3)	> 56 days (3)	Fatal accidents	total	56 days (3)	Fatal accidents
I. FALLS OF GROUNDS AND ROCKS	4.20	4.93	2.10	-	11.23	3.12	2.54	0.80	-	6.45	0.07	-	-	-	0.07	2.17	2.17	0.65	-	5.00	9.56	9.64	3.55	-	22.75	-	-	-
II. TRANSPORT, TOTAL	0.58	1.09	0.58	-	2.25	0.65	0.22	0.14	-	1.01	0.43	0.43	-	-	0.87	2.97	4.35	2.75	0.14	10.21	4.64	6.09	3.48	0.14	14.34	-	-	-
a) Continuous Transport	0.58	1.09	0.36	-	2.03	0.14	0.07	0.07	-	0.29	0.07	-	-	-	0.07	1.01	1.74	0.94	0.14	3.84	1.81	2.90	1.38	0.14	6.23	-	-	-
b) Discontinuous Transport	-	-	0.22	-	0.22	0.51	0.14	0.07	-	0.72	0.36	0.43	-	-	0.80	1.96	2.61	1.81	-	6.38	2.83	3.19	2.10	-	8.11	-	-	-
III FALLS AND MOVEMENT OF THE VICTIM, TOTAL	1.88	2.75	0.58	-	5.22	1.59	1.81	0.65	-	4.06	0.29	0.22	0.22	-	0.72	8.98	12.32	4.27	-	25.57	12.75	17.10	5.72	-	35.57	-	-	-
a) while moving about the mine	1.16	1.81	0.43	-	3.40	1.09	1.23	0.58	-	2.90	0.07	-	-	-	0.07	5.43	8.55	2.61	-	16.59	7.75	11.59	3.62	-	22.97	-	-	-
b) in the course of other activities	0.72	0.94	0.14	-	1.81	0.51	0.58	0.07	-	1.16	0.22	0.22	0.22	-	0.65	3.55	3.77	1.67	-	8.98	5.00	5.51	2.10	-	12.61	-	-	-
IV. MACHINES, TOOLS AND SUPPORTS TOTAL	4.56	7.75	1.88	-	14.20	3.04	1.88	0.51	-	5.43	0.43	-	-	-	0.43	6.09	5.29	1.81	-	13.19	14.13	14.92	4.20	-	33.25	-	-	-
a) Machines	0.22	0.22	0.14	-	0.58	0.36	0.07	-	-	0.43	0.07	-	-	-	0.07	0.72	0.36	0.22	-	1.30	1.38	0.65	0.36	-	2.39	-	-	-
b) Tools	1.59	2.25	0.72	-	4.56	1.67	0.94	0.29	-	2.90	0.29	-	-	-	0.29	2.97	2.90	0.80	-	6.67	6.52	6.09	1.81	-	14.42	-	-	-
c) Supports	2.75	5.29	1.01	-	9.06	1.01	0.87	0.22	-	2.10	0.07	-	-	-	0.07	2.39	2.03	0.80	-	5.22	6.23	8.19	2.03	-	16.45	-	-	-
V. FALLS OF OBJECTS	4.93	6.16	1.81	-	12.90	3.33	2.17	0.72	-	6.23	0.07	0.36	0.07	-	0.51	10.00	10.58	3.77	-	24.34	18.40	19.27	6.38	-	44.05	-	-	-
VI. EXPLOSIVES	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VII. IGNITIONS OR EXPLOSIONS OF FIREDAMP AND COAL DUST	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VIII. OUTBURSTS OF GAS, DE-OXYGENATION, SUFFOCATION OR POISONING BY NATURAL GASES (CO ₂ , CH ₄ , CO, H ₂ S), TOTAL	0.36	-	-	-	0.36	-	-	-	-	-	-	-	-	-	-	0.14	-	-	-	0.14	0.51	-	-	-	0.51	-	-	-
a) Outbursts of Gas	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
b) De-oxygenation and Poisoning by natural Gases	0.36	-	-	-	0.36	-	-	-	-	-	-	-	-	-	-	0.14	-	-	-	0.14	0.51	-	-	-	0.51	-	-	-
IX. HEATINGS OR FIRES	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.07	-	0.07	0.07	0.22	0.07	-	0.07	0.07	0.22	-	-	-
X. INRUSHES	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
XI. ELECTRICITY	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.14	0.14	0.07	-	0.36	0.14	0.14	0.07	-	0.36	-	-	-
XII. OTHER CAUSES	1.59	0.94	0.36	-	2.90	1.01	0.07	0.14	-	1.23	0.14	0.22	-	-	0.36	1.81	1.52	0.80	-	4.13	4.56	2.75	1.30	-	8.62	-	-	-
TOTAL	18.11	23.62	7.32	-	49.05	12.75	8.69	2.97	-	24.41	1.45	1.23	0.29	-	2.97	32.38	36.37	14.20	0.22	83.17	64.77	69.91	24.78	0.22	159.67	-	-	-

(1) Number of hours worked by pit staff and employees of contractor firms who belong to a miners' social insurance scheme.

(2) Accidents involving more than five casualties (i.e. who either died or were unable to resume work underground for at least eight weeks)

(3) Calendar days.

**DETAILED BREAKDOWN OF VICTIMS ACCORDING TO LOCATION
AND NATURE OF INJURY AND PERIOD OF INCAPACITY**

(absolute figures)

COUNTRY FRANCE
COAL-FIELD CENTRE-MIDI

YEAR 1974
MAN-HOURS WORKED ⁽¹⁾ 13.303.443

NATURE OF THE INJURY	Amputations and enucleations 1			Fractures with or without dislocation 2			Luxations, twist and sprains 3			Concussion and internal injury 4			Open wounds contusion and muscular abrasions 5			Burns and harmful effects of electricity and radiation 6			Poisoning and suffocation 7			Multiple injuries of those not specified ⁽⁸⁾ 8			TOTAL 9										
	> 56 days ⁽⁵⁾	Fatal accidents	total	> 56 days ⁽⁶⁾	Fatal accidents	total	> 56 days ⁽⁶⁾	Fatal accidents	total	> 56 days ⁽⁶⁾	Fatal accidents	total	> 56 days ⁽⁵⁾	Fatal accidents	total	> 56 days ⁽⁵⁾	Fatal accidents	total	> 56 days ⁽⁵⁾	Fatal accidents	total	> 56 days ⁽⁵⁾	Fatal accidents	total	4 to 20 days ⁽⁵⁾	21 to 56 days ⁽⁶⁾	> 56 days ⁽⁶⁾	Fatal accidents	total						
LOCATION OF THE INJURY																																			
I. Head and neck	-	-	-	1	1	2	1	-	1	-	-	-	7	-	7	-	-	-	-	-	-	-	-	-	-	-	53	42	9	1	105				
II. Eyes	1	-	1	-	-	-	-	-	-	-	-	-	2	-	2	-	-	-	-	-	-	-	-	-	-	2	-	2	87	9	5	-	101		
III. Trunk	-	-	-	20	-	20	39	-	39	3	1	4	8	-	8	-	-	-	-	-	-	-	-	-	-	1	-	1	172	263	71	1	507		
IV. Upper limbs (excluding the hands) ⁽³⁾	-	-	-	10	-	10	6	-	6	-	-	-	11	-	11	-	-	-	-	-	-	-	-	-	-	-	-	-	53	54	27	-	134		
V. Hands	5	-	5	69	-	69	-	-	-	-	-	-	28	-	28	-	-	-	-	-	-	-	-	-	-	1	-	1	187	254	103	-	544		
VI. Lower limbs (excluding feet) ⁽⁴⁾	-	-	-	18	-	18	22	-	22	-	-	-	37	-	37	-	-	-	-	-	-	-	-	-	-	1	-	1	184	175	78	-	437		
VII. Feet	1	-	1	22	-	22	-	-	-	-	-	-	7	-	7	-	-	-	-	-	-	-	-	-	-	2	-	2	84	106	32	-	222		
VIII. Multiple locations	-	-	-	3	-	3	-	-	-	-	-	-	6	-	6	-	-	-	-	-	-	-	-	-	-	7	-	7	23	46	16	-	85		
IX. Not specified	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	2	-	-	-	11	6	1	1	19
TOTAL	7	-	7	143	1	144	68	-	68	3	1	4	106	-	106	-	-	-	-	-	-	-	-	-	1	1	2	14	-	14	894	965	342	3	2.204

⁽¹⁾ Number of hours worked by pit staff and employees of contractor firms who belong to a miner's social insurance scheme.

⁽²⁾ Including complications.

⁽³⁾ The shoulders and the wrists are included under „upper limbs“.

⁽⁴⁾ The hips and the ankles are included under „Lower limbs“.

⁽⁵⁾ Calendar days.

DETAILED BREAKDOWN OF VICTIMS ACCORDING TO LOCATION
AND NATURE OF INJURY AND PERIOD OF INCAPACITY

Table 2b

(Frequency rates)

COUNTRY FRANCE
COAL-FIELD CENTRE-MIDI

YEAR 1974
MAN-HOURS WORKED (1) 13.803.443

NATURE OF THE INJURY	Amputations and enucleations 1			Fractures with or without dislocation 2			Luxations, twist and sprains 3			Concussion and internal injury 4			Open wounds contusion and muscular abrasions 5			Burns and harmful effects of electricity and radiation 6			Poisoning and suffocation 7			Multiple injuries of those not specified (8) 8			TOTAL 9				
	> 56 days (2)	Fatal accidents	total	> 56 days (2)	Fatal accidents	total	> 56 days (2)	Fatal accidents	total	> 56 days (2)	Fatal accidents	total	> 56 days (2)	Fatal accidents	total	> 56 days (2)	Fatal accidents	total	> 56 days (2)	Fatal accidents	total	4 to 20 days (2)	21 to 56 days (2)	> 56 days (2)	Fatal accidents	total			
I. Head and neck	-	-	-	0,07	0,07	0,14	0,07	-	0,07	-	-	-	0,51	-	0,51	-	-	-	-	-	-	-	-	-	3,84	3,04	0,65	0,07	7,61
II. Eyes	0,07	-	0,07	-	-	-	-	-	-	-	-	-	0,14	-	0,14	-	-	-	-	-	-	0,14	-	0,14	6,30	0,65	0,36	-	7,32
III. Trunk	-	-	-	1,45	-	1,45	2,83	-	2,83	0,22	0,07	0,29	0,58	-	0,58	-	-	-	-	-	-	0,07	-	0,07	12,46	19,05	5,14	0,07	36,73
IV. Upper limbs (excluding the hands) (3)	-	-	-	0,72	-	0,72	0,43	-	0,43	-	-	-	0,80	-	0,80	-	-	-	-	-	-	-	-	-	6,74	4,64	1,96	-	13,33
V. Hands	0,36	-	0,36	5,00	-	5,00	-	-	-	-	-	-	2,03	-	2,03	-	-	-	-	-	-	0,07	-	0,07	13,55	18,40	7,46	-	39,41
VI. Lower limbs (excluding feet) (4)	-	-	-	1,30	-	1,30	1,59	-	1,59	-	-	-	2,68	-	2,68	-	-	-	-	-	-	0,07	-	0,07	13,33	12,68	5,65	-	31,66
VII. Feet	0,07	-	0,07	1,59	-	1,59	-	-	-	-	-	-	0,51	-	0,51	-	-	-	-	-	-	0,14	-	0,14	5,20	7,28	2,32	-	12,78
VIII. Multiple locations	-	-	-	0,22	-	0,22	-	-	-	-	-	-	0,33	-	0,33	-	-	-	-	-	-	0,51	-	0,51	1,67	3,33	1,15	-	6,15
IX. Not specified	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0,07	0,07	0,14	-	-	-	0,80	0,43	0,07	0,07	1,38
TOTAL	0,51	-	0,51	10,36	0,07	10,43	4,93	-	4,93	0,22	0,07	0,29	7,68	-	7,68	-	-	-	0,07	0,07	0,14	1,01	-	1,01	64,77	69,91	24,78	0,22	159,67

(1) Number of hours worked by pit staff and employees of contractor firms who belong to a miner's social insurance scheme.
(2) including complications
(3) The shoulders and the wrists are included under „upper limbs“.
(4) The hips and the ankles are included under „Lower limbs“
(5) Calendar days.

MINES SAFETY AND HEALTH COMMISSION

Common Statistics on victims of accidents underground in coal mines

DETAILED BREAKDOWN OF ACCIDENT VICTIMS ACCORDING TO CAUSE AND SITE OF ACCIDENT AND PERIOD OF INCAPACITY

(absolute figures)

Table 1a

COUNTRY FRANCE
COAL-FIELD TOTAL

YEAR 1974
MAN-HOURS WORKED (1) 72 799 995

SITE OF THE ACCIDENT	Production faces 1					Headings excluding shafts and staple-pits 2					Shafts and staple-pits 3					Other places 4					Total of accidents underground 5					Group accidents (2) 6				
	CAUSES OF ACCIDENTS	Period of incapacity	4 to 20 days (3)	21 to 56 days (3)	> 56 days (3)	Fatal accidents	total	4 to 20 days (3)	21 to 56 days (3)	> 56 days (3)	Fatal accidents	total	4 to 20 days (3)	21 to 56 days (3)	> 56 days (3)	Fatal accidents	total	4 to 20 days (3)	21 to 56 days (3)	> 56 days (3)	Fatal accidents	total	56 days (3)	Fatal accidents	total					
I. FALLS OF GROUNDS AND ROCKS			18.83	8.30	3.24	0.08	30.45	7.62	3.16	0.96	-	11.74	0.04	-	-	-	0.04	2.66	1.33	0.32	0.03	4.34	29.16	12.79	4.52	0.11	46.58	-	-	-
II. TRANSPORT, TOTAL			1.14	0.87	0.49	0.01	2.51	1.02	0.71	0.41	0.01	2.16	0.22	0.26	0.08	-	0.56	2.68	2.54	1.37	0.10	6.69	5.05	4.38	2.36	0.12	11.92	-	-	-
a) Continuous Transport			0.59	0.65	0.33	0.01	1.58	0.29	0.15	0.12	-	0.56	0.01	-	-	-	0.01	0.40	0.44	0.27	0.03	1.14	1.29	1.24	0.73	0.04	3.30	-	-	-
b) Discontinuous Transport			0.55	0.22	0.16	-	0.93	0.73	0.56	0.29	0.01	1.59	0.21	0.26	0.08	-	0.55	2.28	2.10	1.10	0.07	5.55	3.76	3.15	1.63	0.08	8.63	-	-	-
III. FALLS AND MOVEMENT OF THE VICTIM, TOTAL			6.88	4.35	1.06	-	12.29	4.51	2.47	0.81	-	7.79	0.43	0.23	0.08	0.01	0.76	9.18	6.54	2.16	-	17.87	20.99	13.60	4.11	0.01	38.71	-	-	-
a) while moving about the mine			5.70	3.35	0.88	-	9.93	3.94	1.95	0.65	-	6.54	0.36	0.12	0.01	-	0.49	7.32	4.92	1.57	-	13.80	17.32	10.34	3.10	-	30.77	-	-	-
b) in the course of other activities			1.18	1.00	0.18	-	2.36	0.56	0.52	0.16	-	1.25	0.07	0.11	0.07	0.01	0.26	1.85	1.62	0.59	-	4.07	3.67	3.26	1.00	0.01	7.94	-	-	-
IV. MACHINES, TOOLS AND SUPPORTS TOTAL			12.25	6.28	1.57	0.03	20.12	5.32	2.40	0.60	-	8.32	0.16	0.04	0.01	-	0.22	4.88	2.65	0.80	-	8.32	22.61	11.37	2.98	0.03	36.99	-	-	-
a) Machines			3.13	1.22	0.52	0.01	4.89	2.17	0.69	0.32	-	3.17	0.05	0.03	-	-	0.06	1.63	0.78	0.23	-	2.65	6.99	2.72	1.07	0.01	10.80	-	-	-
b) Tools			6.98	3.01	0.71	-	10.70	2.51	1.24	0.21	-	3.96	0.10	0.01	0.01	-	0.12	2.50	1.36	0.40	-	4.26	12.09	5.62	1.33	-	19.04	-	-	-
c) Supports			2.14	2.05	0.33	0.01	4.53	0.63	0.48	0.08	-	1.20	0.01	-	-	-	0.01	0.74	0.51	0.16	-	1.41	3.53	3.04	0.58	0.01	7.16	-	-	-
V FALLS OF OBJECTS			15.12	7.84	2.18	0.01	25.16	7.20	3.31	0.91	-	11.41	0.26	0.22	0.07	-	0.55	10.25	6.30	1.96	0.01	18.53	32.84	17.68	5.12	0.03	55.67	-	-	-
VI. EXPLOSIVES			0.01	0.01	-	-	0.03	-	-	-	-	-	-	-	-	-	-	0.03	-	-	-	0.03	0.04	0.01	-	-	0.05	-	-	-
VII. IGNITIONS OR EXPLOSIONS OF FIREDAMP AND COAL DUST			-	-	-	0.15	0.15	-	-	-	0.10	0.10	-	-	-	-	-	0.01	-	0.08	0.33	0.43	0.01	-	0.08	0.58	0.67	0.07	0.58	0.65
VIII. OUTBURSTS OF GAS, DE-OXYGENATION, SUFFOCATION OR POISONING BY NATURAL GASES (CO ₂ , CH ₄ , CO, H ₂ S), TOTAL			0.10	-	-	-	0.10	0.01	0.01	-	-	0.03	-	-	-	-	-	0.03	-	-	-	0.03	0.14	0.01	-	-	0.15	-	-	-
a) Outbursts of Gas			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
b) De-oxygenation and Poisoning by natural Gases			0.10	-	-	-	0.10	0.01	0.01	-	-	0.03	-	-	-	-	-	0.03	-	-	-	0.03	0.14	0.01	-	-	0.15	-	-	-
IX. HEATINGS OR FIRES			0.01	-	-	-	0.01	0.01	-	-	-	0.01	-	-	-	-	-	0.01	-	0.03	0.01	0.05	0.04	-	0.03	0.01	0.08	-	-	-
X. INRUSHES			0.05	-	-	-	0.05	0.01	-	-	-	0.01	-	-	-	-	-	0.03	-	-	-	0.03	0.10	-	-	-	0.10	-	-	-
XI. ELECTRICITY			-	-	-	-	0.03	-	-	-	-	0.03	-	-	-	-	-	0.03	0.07	0.01	-	0.11	0.05	0.07	0.01	-	0.14	-	-	-
XII. OTHER CAUSES			2.71	0.67	0.23	-	3.61	1.84	0.27	0.05	-	2.17	0.23	0.08	0.01	-	0.33	2.46	0.60	0.33	-	3.39	7.24	1.63	0.63	-	9.51	-	-	-
TOTAL			57.12	28.32	8.78	0.29	94.51	27.57	12.35	3.75	0.11	43.78	1.35	0.84	0.26	0.01	2.46	32.24	20.04	7.06	0.48	59.82	118.28	61.55	19.85	0.89	200.58	0.07	0.58	0.65

(1) Number of hours worked by pit staff and employees of contractor firms who belong to a miners' social insurance scheme.

(2) Accidents involving more than five casualties (i.e. who either died or were unable to resume work underground for at least eight weeks)

(3) Calendar days.

MINES SAFETY AND HEALTH COMMISSION

Common Statistics on victims of accidents underground in coal mines

DETAILED BREAKDOWN OF ACCIDENT VICTIMS ACCORDING TO CAUSE AND SITE OF ACCIDENT AND PERIOD OF INCAPACITY

(frequency rates)

YEAR 1974
MAN-HOURS WORKED (1) 72 799 995

Table 1b

COUNTRY FRANCE
COAL-FIELD TOTAL

SITE OF THE ACCIDENT	Production faces 1					Headings excluding shafts and staple-pits 2					Shafts and staple-pits 3					Other places 4					Total of accidents underground 5					Group accidents (2) 6					
	Period of incapacity	4 to 20 days (3)	21 to 56 days (3)	> 56 days (3)	Fatal accidents	total	4 to 20 days (3)	21 to 56 days (3)	> 56 days (3)	Fatal accidents	total	4 to 20 days (3)	21 to 56 days (3)	> 56 days (3)	Fatal accidents	total	4 to 20 days (3)	21 to 56 days (3)	> 56 days (3)	Fatal accidents	total	4 to 20 days (3)	21 to 56 days (3)	> 56 days (3)	Fatal accidents	total	56 days (3)	Fatal accidents	total		
I. FALLS OF GROUNDS AND ROCKS	1	371	604	236	6	217	555	230	70	-	855	3	-	-	-	3	194	97	23	2	316	2	123	931	329	8	3	391	-	-	-
II. TRANSPORT, TOTAL		83	63	36	1	183	74	52	30	1	157	16	19	6	-	41	195	185	100	7	487	368	319	172	9	868	-	-	-		
a) Continuous Transport		43	47	24	1	115	21	11	9	-	41	1	-	-	-	1	29	32	20	2	83	94	90	53	3	240	-	-	-		
b) Discontinuous Transport		40	16	12	-	68	53	41	21	1	116	15	19	6	-	40	166	153	80	5	404	274	229	119	6	628	-	-	-		
III FALLS AND MOVEMENT OF THE VICTIM, TOTAL		501	317	77	-	895	328	180	59	-	567	31	17	6	1	55	668	476	157	-	1 301	1 528	990	299	1	2 818	-	-	-		
a) while moving about the mine		415	244	64	-	723	287	142	47	-	476	26	9	1	-	36	533	358	114	-	1 005	1 261	753	226	-	2 240	-	-	-		
b) in the course of other activities		86	73	13	-	172	41	38	12	-	91	5	8	5	1	19	135	118	43	-	296	267	237	73	1	578	-	-	-		
IV MACHINES, TOOLS AND SUPPORTS TOTAL		892	457	114	2	1 465	387	175	44	-	606	12	3	1	-	16	355	193	58	-	606	1 646	828	217	2	2 693	-	-	-		
a) Machines		228	89	38	1	356	158	50	23	-	231	4	2	-	-	6	119	57	17	-	193	509	198	78	1	786	-	-	-		
b) Tools		508	219	52	-	779	183	90	15	-	288	7	1	1	-	9	182	99	29	-	310	880	409	97	-	1 386	-	-	-		
c) Supports		156	149	24	1	330	46	35	6	-	87	1	-	-	-	1	54	37	12	-	103	257	221	42	1	521	-	-	-		
V. FALLS OF OBJECTS		1 101	571	159	1	1 832	524	241	66	-	831	19	16	5	-	40	746	459	143	1	1 349	2 391	1 287	373	2	4 053	-	-	-		
VI. EXPLOSIVES		1	1	-	-	2	-	-	-	-	-	-	-	-	-	-	2	-	-	-	2	3	1	-	-	4	-	-	-		
VII IGNITIONS OR EXPLOSIONS OF FIREDAMP AND COAL DUST		-	-	-	11	11	-	-	-	7	7	-	-	-	-	-	1	-	6	24	31	1	-	6	42	49	5	42	47		
VIII OUTBURSTS OF GAS, DE-OXYGENATION, SUFFOCATION OR POISONING BY NATURAL GASES (CO ₂ , CH ₄ , CO, H ₂ S), TOTAL		7	-	-	-	7	1	1	-	2	-	-	-	-	-	2	-	-	-	-	2	10	1	-	-	11	-	-	-		
a) Outbursts of Gas		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
b) De-oxygenation and Poisoning by natural Gases		7	-	-	-	7	1	1	-	2	-	-	-	-	-	2	-	-	-	-	2	10	1	-	-	11	-	-	-		
IX. HEATINGS OR FIRES		1	-	-	-	1	1	-	-	-	1	-	-	-	-	-	1	-	2	1	4	3	-	2	1	6	-	-	-		
X INRUSHES		4	-	-	-	4	1	-	-	-	1	-	-	-	-	-	2	-	-	-	2	7	-	-	-	7	-	-	-		
XI. ELECTRICITY		-	-	-	-	-	2	-	-	-	2	-	-	-	-	-	2	5	1	-	8	4	5	1	-	10	-	-	-		
XII. OTHER CAUSES		197	49	17	-	263	134	20	4	-	158	17	6	1	-	24	179	44	24	-	247	527	119	46	-	692	-	-	-		
TOTAL		4 158	2 062	639	21	5 880	2 007	899	273	8	3 187	98	61	19	1	179	2 347	1 459	514	35	4 355	8 611	4 481	1 445	65	14 602	5	42	47		

(1) Number of hours worked by pit staff and employees of contractor firms who belong to a miners' social insurance scheme
(2) Accidents involving more than five casualties (i.e. who either died or were unable to resume work underground for at least eight weeks)
(3) Calendar days

MINES SAFETY AND HEALTH COMMISSION

Common Statistics on victims of accidents underground in coal mines

DETAILED BREAKDOWN OF VICTIMS ACCORDING TO LOCATION AND NATURE OF INJURY AND PERIOD OF INCAPACITY

Table 2a

(absolute figures)

COUNTRY FRANCE
COAL-FIELD TOTAL

YEAR 1974
MAN-HOURS WORKED (1) 72.799.995

NATURE OF THE INJURY	Amputations and enucleations 1			Fractures with or without dislocation 2			Luxations, twist and sprains 3			Concussion and internal injury 4			Open wounds contusion and muscular abrasions 5			Burns and harmful effects of electricity and radiation 6			Poisoning and suffocation 7			Multiple injuries of those not specified (2) 8			TOTAL 9					
	> 56 days (5)	Fatal accidents	total	> 56 days (5)	Fatal accidents	total	> 56 days (5)	Fatal accidents	total	> 56 days (5)	Fatal accidents	total	> 56 days (5)	Fatal accidents	total	> 56 days (5)	Fatal accidents	total	> 56 days (5)	Fatal accidents	total	> 56 days (5)	Fatal accidents	total	4 to 20 days (5)	21 to 56 days (5)	> 56 days (5)	Fatal accidents	total	
I. Head and neck	1	-	1	23	7	30	1	-	1	4	-	4	41	-	41	-	-	-	-	-	-	1	-	1	714	248	71	7	1.040	
II. Eyes	1	-	1	-	-	-	-	-	-	1	-	1	12	-	12	-	-	-	-	-	-	2	-	2	810	54	16	-	880	
III. Trunk	1	-	1	66	5	73	63	-	63	2	2	10	27	-	27	-	-	-	-	-	4	-	4	1.170	331	176	7	2.192		
IV. Upper limbs (excluding the hands) (3)	1	-	1	64	-	64	1	-	1	-	-	-	52	-	52	-	-	-	-	-	1	-	1	1.160	301	136	-	1.677		
V. Hands	34	-	34	262	-	262	12	-	12	-	-	-	132	-	132	1	-	1	-	-	3	-	3	2.450	1.612	444	-	4.514		
VI. Lower limbs (excluding feet) (4)	2	-	2	136	-	136	73	-	73	-	-	-	173	-	173	-	-	-	-	-	4	-	4	1.329	736	300	-	2.453		
VII. Feet	5	-	5	94	-	94	9	-	9	-	-	-	33	-	33	-	-	-	-	-	3	-	3	659	410	149	-	1.218		
VIII. Multiple locations	-	-	-	14	2	16	-	-	-	-	-	-	25	1	26	5	42	47	-	-	14	3	17	266	197	50	48	569		
IX. Not specified	-	-	-	-	-	-	-	-	-	-	-	-	2	-	2	-	-	-	-	-	2	2	4	37	12	7	3	59		
TOTAL	45	-	45	651	14	675	181	-	181	13	2	15	502	1	503	6	42	48	-	-	2	4	35	4	39	0.611	4.441	1.445	65	14.602

(1) Number of hours worked by pit staff and employees of contractor firms who belong to a miner's social insurance scheme

(2) including complications

(3) The shoulders and the wrists are included under „upper limbs“

(4) The hips and the ankles are included under „Lower limbs“

(5) Calendar days.

MINES SAFETY AND HEALTH COMMISSION

Common Statistics on victims of accidents underground in coal mines

DETAILED BREAKDOWN OF VICTIMS ACCORDING TO LOCATION AND NATURE OF INJURY AND PERIOD OF INCAPACITY

Table 2b

COUNTRY FRANCE
COAL-FIELD TOTAL

(Frequency rates)

YEAR 1974
MAN-HOURS WORKED (1)

72.799.995

NATURE OF THE INJURY	Amputations and enucleations 1			Fractures with or without dislocation 2			Luxations, twist and sprains 3			Concussion and internal injury 4			Open wounds contusion and muscular abrasions 5			Burns and harmful effects of electricity and radiation 6			Poisoning and suffocation 7			Multiple injuries of those not specified (2) 8			TOTAL 9				
	> 56 days (4)	Fatal accidents	total	> 56 days (4)	Fatal accidents	total	> 56 days (4)	Fatal accidents	total	> 56 days (4)	Fatal accidents	total	> 56 days (4)	Fatal accidents	total	> 56 days (4)	Fatal accidents	total	> 56 days (4)	Fatal accidents	total	4 to 20 days (5)	21 to 56 days (5)	> 56 days (5)	Fatal accidents	total			
I. Head and neck	0,01	-	0,01	0,32	0,10	0,41	0,01	-	0,01	0,05	-	0,05	0,56	-	0,56	-	-	-	0,01	-	0,01	9,81	3,41	0,98	0,10	14,29			
II. Eyes	0,01	-	0,01							0,01	-	0,01	0,16	-	0,16	-	-	-	0,03	-	0,03	11,13	0,74	0,22	-	12,09			
III. Trunk	0,01	-	0,01	0,93	0,07	1,00	0,93	-	0,93	0,11	0,03	0,14	0,37	-	0,37	-	-	-	0,05	-	0,05	16,13	11,41	2,42	0,10	30,11			
IV. Upper limbs (excluding the hands) (2)	0,01	-	0,01	0,88	-	0,88	0,25	-	0,25				0,71	-	0,71	-	-	-	0,01	-	0,01	15,93	5,23	1,87	-	23,04			
V. Hands	0,47	-	0,47	3,60	-	3,60	0,16	-	0,16				1,31	-	1,31	0,01	-	0,01	0,04	-	0,04	33,76	22,14	6,10	-	62,01			
VI. Lower limbs (excluding feet) (3)	0,03	-	0,03	1,87	-	1,87	1,00	-	1,00				2,38	-	2,38	-	-	-	0,05	-	0,05	18,26	10,11	5,33	-	33,70			
VII. Feet	0,07	-	0,07	1,29	-	1,29	0,12	-	0,12				0,52	-	0,52	-	-	-	0,04	-	0,04	9,05	5,63	2,05	-	16,73			
VIII. Multiple locations	-	-	-	0,19	0,03	0,22	-	-	-	-	-	-	0,34	0,01	0,36	0,07	0,58	0,65	0,23	0,04	0,23	3,65	2,71	0,80	0,66	7,82			
IX. Not specified													0,03	-	0,03	-	-	-	0,03	0,03	0,05	0,05	0,01	0,05	0,51	0,16	0,10	0,04	0,81
TOTAL	0,62	-	0,62	9,08	0,19	9,27	2,49	-	2,49	0,18	0,03	0,21	6,90	0,01	6,91	0,08	0,58	0,66	0,03	0,03	0,05	0,48	0,05	0,54	118,23	61,55	19,35	0,89	200,58

(1) Number of hours worked by pit staff and employees of contractor firms who belong to a miner's social insurance scheme.

(2) including complications.

(3) The shoulders and the wrists are included under „upper limbs“.

(4) The hips and the ankles are included under „Lower limbs“.

(5) Calendar days.

MINES SAFETY AND HEALTH COMMISSION

Common Statistics on victims of accidents underground in coal mines

DETAILED BREAKDOWN OF ACCIDENT VICTIMS ACCORDING TO CAUSE AND SITE OF ACCIDENT AND PERIOD OF INCAPACITY

(absolute figures)

COUNTRY ITALY
COAL-FIELD SULCIS (MINES OF SERUCI AND NEW CORTHOGHIANA)

YEAR 1974
MAN-HOURS WORKED (1) 608 165

Table 1a

SITE OF THE ACCIDENT CAUSES OF ACCIDENTS	Production faces 1					Headings excluding shafts and staple-pits 2					Shafts and staple-pits 3					Other places 4					Total of accidents underground 5					Group accidents (2) 6				
	Period of incapacity	4 to 20 days (3)	21 to 56 days (3)	> 56 days (3)	Fatal accidents	total	4 to 20 days (3)	21 to 56 days (3)	> 56 days (3)	Fatal accidents	total	4 to 20 days (3)	21 to 56 days (3)	> 56 days (3)	Fatal accidents	total	4 to 20 days (3)	21 to 56 days (3)	> 56 days (3)	Fatal accidents	total	4 to 20 days (3)	21 to 56 days (3)	> 56 days (3)	Fatal accidents	total	56 days (3)	Fatal accidents	total	
I. FALLS OF GROUNDS AND ROCKS	-	-	-	-	-	5	-	-	-	-	5	-	-	-	-	-	1	-	-	-	-	1	6	-	-	-	6	-	-	-
II. TRANSPORT, TOTAL	-	-	-	-	-	1	1	-	-	-	2	-	-	-	-	-	1	-	-	-	-	1	2	1	-	-	3	-	-	-
a) Continuous Transport	-	-	-	-	-	-	1	-	-	-	1	-	-	-	-	-	1	-	-	-	-	1	1	1	-	-	2	-	-	-
b) Discontinuous Transport	-	-	-	-	-	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	1	-	-	-
III. FALLS AND MOVEMENT OF THE VICTIM, TOTAL	-	-	-	-	-	7	-	-	-	-	7	-	-	-	-	-	4	1	-	-	-	5	11	1	-	-	12	-	-	-
a) while moving about the mine	-	-	-	-	-	3	-	-	-	-	3	-	-	-	-	-	2	1	-	-	-	3	5	1	-	-	6	-	-	-
b) in the course of other activities	-	-	-	-	-	4	-	-	-	-	4	-	-	-	-	-	2	-	-	-	-	2	6	-	-	-	6	-	-	-
IV. MACHINES, TOOLS AND SUPPORTS TOTAL	-	-	-	-	-	7	-	-	-	-	7	-	-	-	-	-	-	-	-	-	-	7	-	-	-	7	-	-	-	
a) Machines	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
b) Tools	-	-	-	-	-	3	-	-	-	-	3	-	-	-	-	-	-	-	-	-	-	3	-	-	-	3	-	-	-	
c) Supports	-	-	-	-	-	4	-	-	-	-	4	-	-	-	-	-	-	-	-	-	-	4	-	-	-	4	-	-	-	
V. FALLS OF OBJECTS	-	-	-	-	-	2	1	1	-	-	4	-	-	-	-	-	4	-	-	-	-	4	6	1	1	-	8	-	-	-
VI. EXPLOSIVES	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
VII. IGNITIONS OR EXPLOSIONS OF FIREDAMP AND COAL DUST	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
VIII. OUTBURSTS OF GAS, DE-OXYGENATION, SUFFOCATION OR POISONING BY NATURAL GASES (CO, CH4, CO, H2S), TOTAL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
a) Outbursts of Gas	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
b) De-oxygenation and Poisoning by natural Gases	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
IX. HEATINGS OR FIRES	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
X. INRUSHES	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
XI. ELECTRICITY	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
XII. OTHER CAUSES	-	-	-	-	-	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	1	-	-	-	1	-	-	-	
TOTAL	-	-	-	-	-	23	2	1	-	-	26	-	-	-	-	-	10	1	-	-	-	11	33	3	1	-	37	-	-	-

(1) Number of hours worked by pit staff and employees of contractor firms who belong to a miners' social insurance scheme.
(2) Accidents involving more than five casualties (i.e. who either died or were unable to resume work underground for at least eight weeks)
(3) Calendar days

MINES SAFETY AND HEALTH
COMMISSION

Common Statistics on victims
of accidents underground in coal mines

DETAILED BREAKDOWN OF ACCIDENT VICTIMS ACCORDING TO CAUSE AND SITE
OF ACCIDENT AND PERIOD OF INCAPACITY

(frequency rates)

COUNTRY ITALY
COAL-FIELD SULCIS (MINES OF SERUCI AND NEW CORTHOGHIANA)

YEAR 1974
MAN-HOURS WORKED (1) 608 165

Table 1b

SITE OF THE ACCIDENT CAUSES OF ACCIDENTS	Period of incapacity	Production faces 1					Headings excluding shafts and staple-pits 2					Shafts and staple-pits 3					Other places 4					Total of accidents underground 5					Group accidents (2) 6				
		4 to 20 days (3)	21 to 56 days (3)	> 56 days (3)	Fatal accidents	total	4 to 20 days (3)	21 to 56 days (3)	> 56 days (3)	Fatal accidents	total	4 to 20 days (3)	21 to 56 days (3)	> 56 days (3)	Fatal accidents	total	4 to 20 days (3)	21 to 56 days (3)	> 56 days (3)	Fatal accidents	total	4 to 20 days (3)	21 to 56 days (3)	> 56 days (3)	Fatal accidents	total	56 days (3)	Fatal accidents	total		
I. FALLS OF GROUNDS AND ROCKS		-	-	-	-	-	8	-	-	-	8	-	-	-	-	-	2	-	-	-	-	2	10	-	-	-	-	10	-	-	-
II. TRANSPORT, TOTAL		-	-	-	-	-	2	1	-	-	3	-	-	-	-	-	2	-	-	-	-	2	4	1	-	-	-	5	-	-	-
a) Continuous Transport		-	-	-	-	-	-	1	-	-	1	-	-	-	-	-	2	-	-	-	-	2	2	1	-	-	-	3	-	-	-
b) Discontinuous Transport		-	-	-	-	-	2	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	2	-	-	-
III. FALLS AND MOVEMENT OF THE VICTIM, TOTAL		-	-	-	-	-	12	-	-	-	12	-	-	-	-	-	6	2	-	-	-	8	18	2	-	-	-	20	-	-	-
a) while moving about the mine		-	-	-	-	-	5	-	-	-	5	-	-	-	-	-	3	2	-	-	-	5	3	2	-	-	-	10	-	-	-
b) in the course of other activities		-	-	-	-	-	7	-	-	-	7	-	-	-	-	-	3	-	-	-	-	3	10	-	-	-	-	10	-	-	-
IV. MACHINES, TOOLS AND SUPPORTS TOTAL		-	-	-	-	-	12	-	-	-	12	-	-	-	-	-	-	-	-	-	-	-	12	-	-	-	-	12	-	-	-
a) Machines		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
b) Tools		-	-	-	-	-	5	-	-	-	5	-	-	-	-	-	-	-	-	-	-	-	5	-	-	-	-	5	-	-	-
c) Supports		-	-	-	-	-	7	-	-	-	7	-	-	-	-	-	-	-	-	-	-	-	7	-	-	-	-	7	-	-	-
V FALLS OF OBJECTS		-	-	-	-	-	3	2	1	-	6	-	-	-	-	-	6	-	-	-	-	6	9	2	1	-	-	12	-	-	-
VI. EXPLOSIVES		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VII. IGNITIONS OR EXPLOSIONS OF FIREDAMP AND COAL DUST		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VIII. OUTBURSTS OF GAS, DE-OXYGENATION, SUFFOCATION OR POISONING BY NATURAL GASES (CO ₂ , CH ₄ , CO, H ₂ S), TOTAL		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
a) Outbursts of Gas		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
b) De-oxygenation and Poisoning by natural Gases		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IX. HEATINGS OR FIRES		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
X. INRUSHES		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
XI. ELECTRICITY		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
XII. OTHER CAUSES		-	-	-	-	-	1	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	1	-	-	-
TOTAL		-	-	-	-	-	38	3	1	-	42	-	-	-	-	-	16	2	-	-	-	18	54	5	1	-	-	60	-	-	-

(1) Number of hours worked by pit staff and employees of contractor firms who belong to a miners' social insurance scheme

(2) Accidents involving more than five casualties (i.e. who either died or were unable to resume work underground for at least eight weeks)

(3) Calendar days

DETAILED BREAKDOWN OF VICTIMS ACCORDING TO LOCATION
AND NATURE OF INJURY AND PERIOD OF INCAPACITY

(absolute figures)

COUNTRY ITALY
COAL-FIELD SULCIS (MINES OF SERUCI AND NEW CORTHOGHIANA)

YEAR 1974
MAN-HOURS WORKED (1) 608.165

NATURE OF THE INJURY	Amputations and enucleations 1			Fractures with or without dislocation 2			Luxations, twist and sprains 3			Concussion and internal injury 4			Open wounds contusion and muscular abrasions 5			Burns and harmful effects of electricity and radiation 6			Poisoning and suffocation 7			Multiple injuries of those not specified (2) 8			TOTAL 9		
	> 56 days (3)	Fatal accidents	total	> 56 days (3)	Fatal accidents	total	> 56 days (3)	Fatal accidents	total	> 56 days (3)	Fatal accidents	total	> 56 days (3)	Fatal accidents	total	> 56 days (3)	Fatal accidents	total	> 56 days (3)	Fatal accidents	total	4 to 20 days (4)	21 to 56 days (4)	> 56 days (4)	Fatal accidents	total	
LOCATION OF THE INJURY																											
I. Head and neck	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	-	-	-	4
II. Eyes	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5	-	-	-	5
III. Trunk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	2
IV. Upper limbs (excluding the hands) (2)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	-	-	-	3
V. Hands	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10	-	-	-	10
VI. Lower limbs (excluding feet) (4)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	3	-	-	7
VII. Feet	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5	-	-	-	5
VIII. Multiple locations	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IX. Not specified	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	1	
TOTAL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	37	

(1) Number of hours worked by pit staff and employees of contractor firms who belong to a miner's social insurance scheme.

(2) Including complications.

(3) The shoulders and the wrists are included under „upper limbs“.

(4) The hips and the ankles are included under „Lower limbs“.

(5) Calendar days

MINES SAFETY AND HEALTH COMMISSION

Common Statistics on victims of accidents underground in coal mines

DETAILED BREAKDOWN OF VICTIMS ACCORDING TO LOCATION AND NATURE OF INJURY AND PERIOD OF INCAPACITY

Table 2b

(Frequency rates)

COUNTRY ITALY
COAL-FIELD SULCIS (MINES OF SERUCI AND NEW CORTOGHIANA)

YEAR 1974
MAN-HOURS WORKED (1) 608,165

NATURE OF THE INJURY	Amputations and enucleations 1			Fractures with or without dislocation 2			Luxations, twist and sprains 3			Concussion and internal injury 4			Open wounds contusion and muscular abrasions 5			Burns and harmful effects of electricity and radiation 6			Poisoning and suffocation 7			Multiple injuries of those not specified (2) 8			TOTAL 9				
	> 56 days (3)	Fatal accidents	total	> 56 days (3)	Fatal accidents	total	> 56 days (3)	Fatal accidents	total	> 56 days (3)	Fatal accidents	total	> 56 days (5)	Fatal accidents	total	> 56 days (5)	Fatal accidents	total	> 56 days (5)	Fatal accidents	total	> 56 days (5)	Fatal accidents	total	4 to 20 days (3)	21 to 56 days (3)	> 56 days (3)	Fatal accidents	total
I. Head and neck	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7	-	-	-	7
II. Eyes	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8	-	-	-	8
III. Trunk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	-	-	-	3
IV. Upper limbs (excluding the hands) (3)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5	-	-	-	5
V. Hands	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	16	-	-	-	16
VI. Lower limbs (excluding feet) (4)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7	5	-	-	12
VII. Feet	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8	-	-	-	8
VIII. Multiple locations	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IX. Not specified	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	1	-	1
TOTAL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	54	5	1	-	-	60		

(1) Number of hours worked by pit staff and employees of contractor firms who belong to a miner's social insurance scheme.

(2) Including complications.

(3) The shoulders and the wrists are included under „upper limbs“.

(4) The hips and the ankles are included under „Lower limbs“.

(5) Calendar days.

DETAILED BREAKDOWN OF ACCIDENT VICTIMS ACCORDING TO CAUSE AND SITE
OF ACCIDENT AND PERIOD OF INCAPACITY

(absolute figures)

COUNTRY NETHERLANDS
COAL-FIELD SOUTH-LIMBOURG

YEAR 1974
MAN-HOURS WORKED (1) 1 920 640

Table 1a

SITE OF THE ACCIDENT CAUSES OF ACCIDENTS	Production faces 1					Headings excluding shafts and staple-pits 2					Shafts and staple-pits 3					Other places 4					Total of accidents underground 5					Group accidents (2) 6			
	Period of incapacity	4 to 20 days (3)	21 to 56 days (3)	> 56 days (3)	Fatal accidents	total	4 to 20 days (3)	21 to 56 days (3)	> 56 days (3)	Fatal accidents	total	4 to 20 days (3)	21 to 56 days (3)	> 56 days (3)	Fatal accidents	total	4 to 20 days (3)	21 to 56 days (3)	> 56 days (3)	Fatal accidents	total	4 to 20 days (3)	21 to 56 days (3)	> 56 days (3)	Fatal accidents	total	56 days (3)	Fatal accidents	total
I. FALLS OF GROUNDS AND ROCKS		48	8	2	-	58	8	2	-	-	10	-	-	-	-	15	5	-	-	20	71	15	2	-	88	-	-	-	
II. TRANSPORT, TOTAL		2	1	1	-	4	2	-	1	-	3	2	-	-	-	2	29	6	3	-	38	35	7	5	-	47	-	-	-
a) Continuous Transport		-	1	1	-	2	1	-	1	-	2	-	-	-	-	9	1	1	-	11	10	2	3	-	15	-	-	-	
b) Discontinuous Transport		2	-	-	-	2	1	-	-	-	1	2	-	-	-	2	20	5	2	-	27	25	5	2	-	32	-	-	-
III FALLS AND MOVEMENT OF THE VICTIM, TOTAL		16	1	-	-	17	2	-	-	-	2	3	1	-	-	4	23	5	1	-	29	44	7	1	-	52	-	-	-
a) while moving about the mine		1	-	-	-	1	-	-	-	-	-	2	-	-	-	2	10	2	1	-	13	13	2	1	-	16	-	-	-
b) in the course of other activities		15	1	-	-	16	2	-	-	-	2	1	1	-	-	2	13	3	-	-	16	31	5	-	-	36	-	-	-
IV MACHINES, TOOLS AND SUPPORTS TOTAL		28	10	6	-	44	3	-	-	-	3	2	-	-	-	2	19	8	3	-	30	52	18	9	-	79	-	-	-
a) Machines		2	4	2	-	8	-	-	-	-	-	1	-	-	-	1	5	1	2	-	8	8	5	4	-	17	-	-	-
b) Tools		9	1	-	-	10	2	-	-	-	2	1	-	-	-	1	12	4	-	-	16	24	5	-	-	29	-	-	-
c) Supports		17	5	4	-	26	1	-	-	-	1	-	-	-	-	2	3	1	-	6	20	8	5	-	33	-	-	-	
V FALLS OF OBJECTS		29	3	1	-	33	3	1	-	-	4	2	-	-	-	2	25	10	2	1	38	59	14	3	1	77	-	-	-
VI EXPLOSIVES		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VII. IGNITIONS OR EXPLOSIONS OF FIREDAMP AND COAL DUST		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VIII. OUTBURSTS OF GAS, DE-OXYGENATION, SUFFOCATION OR POISONING BY NATU- RAL GASES (CO ₂ , CH ₄ , CO, H ₂ S), TOTAL		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
a) Outbursts of Gas		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
b) De-oxygenation and Poisoning by natural Gases		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IX. HEATINGS OR FIRES		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
X. INRUSHES		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
XI ELECTRICITY		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	1	-	1	-	-	-	1	-	-	-
XII OTHER CAUSES		11	-	-	-	11	-	-	-	-	-	1	1	-	-	2	11	-	-	-	11	23	1	-	-	24	-	-	-
TOTAL		134	23	10	-	167	18	3	1	-	22	10	2	-	-	12	122	35	9	1	167	284	63	20	1	368	-	-	-

(1) Number of hours worked by pit staff and employees of contractor firms who belong to a miners' social insurance scheme

(2) Accidents involving more than five casualties (i.e. who either died or were unable to resume work underground for at least eight weeks)

(3) Calendar days

MINES SAFETY AND HEALTH COMMISSION

Common Statistics on victims of accidents underground in coal mines

DETAILED BREAKDOWN OF ACCIDENT VICTIMS ACCORDING TO CAUSE AND SITE OF ACCIDENT AND PERIOD OF INCAPACITY

(frequency rates)

COUNTRY NETHERLANDS
COAL-FIELD SOUTH-LIMBOURG

YEAR 1974
MAN-HOURS WORKED (1) 1 920 640

Table 1b

SITE OF THE ACCIDENT	Production faces 1					Headings excluding shafts and staple-pits 2					Shafts and staple-pits 3					Other places 4					Total of accidents underground 5					Group accidents (2) 6			
	Period of incapacity	4 to 20 days (3)	21 to 56 days (3)	> 56 days (3)	Fatal accidents	total	4 to 20 days (3)	21 to 56 days (3)	> 56 days (3)	Fatal accidents	total	4 to 20 days (3)	21 to 56 days (3)	> 56 days (3)	Fatal accidents	total	4 to 20 days (3)	21 to 56 days (3)	> 56 days (3)	Fatal accidents	total	4 to 20 days (3)	21 to 56 days (3)	> 56 days (3)	Fatal accidents	total	56 days (3)	Fatal accidents	total
I. FALLS OF GROUNDS AND ROCKS		24.99	4.17	1.04	-	30.20	4.17	1.04	-	-	5.21	-	-	-	-	7.81	2.60	-	-	-	10.41	36.97	7.81	1.04	-	45.82	-	-	-
II. TRANSPORT, TOTAL		1.04	0.52	0.52	-	2.08	1.04	-	0.52	-	1.56	1.04	-	-	-	1.04	15.10	3.12	1.56	-	19.79	18.22	3.65	2.60	-	24.47	-	-	-
a) Continuous Transport		-	0.52	0.52	-	1.04	0.52	-	0.52	-	1.04	-	-	-	-	4.69	0.52	0.52	-	5.73	5.21	1.04	1.56	-	7.81	-	-	-	
b) Discontinuous Transport		1.04	-	-	-	1.04	0.52	-	-	-	0.52	1.04	-	-	-	1.04	10.41	2.60	1.04	-	14.06	13.02	2.60	1.04	-	16.66	-	-	-
III. FALLS AND MOVEMENT OF THE VICTIM, TOTAL		8.33	0.52	-	-	8.85	1.04	-	-	-	1.04	1.56	0.52	-	-	2.08	11.98	2.60	0.52	-	15.10	22.10	3.65	0.52	-	27.07	-	-	-
a) while moving about the mine		0.52	-	-	-	0.52	-	-	-	-	1.04	-	-	-	-	1.04	5.21	1.04	0.52	-	6.77	6.77	1.04	0.52	-	8.33	-	-	-
b) in the course of other activities		7.81	0.52	-	-	8.33	1.04	-	-	-	1.04	0.52	0.52	-	-	1.04	6.77	1.56	-	-	8.33	16.14	2.60	-	-	18.74	-	-	-
IV. MACHINES, TOOLS AND SUPPORTS TOTAL		14.58	5.21	3.12	-	22.91	1.56	-	-	-	1.56	1.04	-	-	-	1.04	9.89	4.17	1.56	-	15.62	27.07	9.37	4.69	-	41.13	-	-	-
a) Machines		1.04	2.08	1.04	-	4.17	-	-	-	-	0.52	-	-	-	-	0.52	2.60	0.52	1.04	-	4.17	4.17	2.60	2.08	-	8.85	-	-	-
b) Tools		4.69	0.52	-	-	5.21	1.04	-	-	-	1.04	0.52	-	-	-	0.52	6.25	2.08	-	-	8.33	12.50	2.60	-	-	15.10	-	-	-
c) Supports		8.85	2.60	2.08	-	13.54	0.52	-	-	-	0.52	-	-	-	-	1.04	1.56	0.52	-	-	3.12	10.41	4.17	2.60	-	17.18	-	-	-
V. FALLS OF OBJECTS		15.10	1.56	0.52	-	17.18	1.56	0.52	-	-	2.08	1.04	-	-	-	1.04	13.02	5.21	1.04	0.52	19.79	39.72	7.29	1.56	0.52	40.09	-	-	-
VI. EXPLOSIVES		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VII. IGNITIONS OR EXPLOSIONS OF FIREDAMP AND COAL DUST		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VIII. OUTBURSTS OF GAS, DE-OXYGENATION, SUFFOCATION OR POISONING BY NATURAL GASES (CO, CH, CO, H ₂ S), TOTAL		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
a) Outbursts of Gas		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
b) De-oxygenation and Poisoning by natural Gases		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IX. HEATINGS OR FIRES		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
X. INRUSHES		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
XI. ELECTRICITY		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.52	-	-	-	0.52	-	0.52	-	-	0.52	-	-	-
XII. OTHER CAUSES		5.73	-	-	-	5.73	-	-	-	-	0.52	0.52	-	-	-	1.04	5.73	-	-	-	5.73	11.98	0.52	-	-	12.50	-	-	-
TOTAL		69.77	11.98	5.21	-	86.95	9.37	1.56	0.52	-	11.46	5.21	1.04	-	-	6.25	63.52	18.22	4.69	0.52	86.95	147.87	32.80	10.41	0.52	191.60	-	-	-

(1) Number of hours worked by pit staff and employees of contractor firms who belong to a miners' social insurance scheme.
(2) Accidents involving more than five casualties (i.e. who either died or were unable to resume work underground for at least eight weeks)
(3) Calendar days

Common Statistics on victims of accidents underground in coal mines

DETAILED BREAKDOWN OF VICTIMS ACCORDING TO LOCATION AND NATURE OF INJURY AND PERIOD OF INCAPACITY

(absolute figures)

COUNTRY COAL-FIELD

NETHERLANDS SOUTH-LIMBOURG

YEAR 1974
MAN-HOURS WORKED (1) 1.920.640

NATURE OF THE INJURY	Amputations and enucleations 1			Fractures with or without dislocation 2			Luxations, twist and sprains 3			Concussion and internal injury 4			Open wounds contusion and muscular abrasions 5			Burns and harmful effects of electricity and radiation 6			Poisoning and suffocation 7			Multiple injuries of those not specified (2) 8			TOTAL 9								
	> 56 days (3)	Fatal accidents	total	> 56 days (3)	Fatal accidents	total	> 56 days (3)	Fatal accidents	total	> 56 days (3)	Fatal accidents	total	> 56 days (3)	Fatal accidents	total	> 56 days (3)	Fatal accidents	total	> 56 days (3)	Fatal accidents	total	4 to 20 days (4)	21 to 56 days (4)	> 56 days (3)	Fatal accidents	total							
PERIOD OF INCAPACITY																																	
LOCATION OF THE INJURY																																	
I. Head and neck	-	-	-	-	1	1	-	-	-	-	-	-	1	-	1	-	-	-	-	-	-	-	-	-	-	-	30	1	1	1	33		
II. Eyes	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	21	2	-	-	23		
III. Trunk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	1	21	1	1	-	23
IV. Upper limbs (excluding the hands) (3)	-	-	-	1	-	1	-	-	-	-	-	-	1	-	1	-	-	-	-	-	-	-	-	-	-	-	16	5	2	-	23		
V. Hands	-	-	-	4	-	4	-	-	-	-	-	-	1	-	1	-	-	-	-	-	-	-	-	-	-	2	-	2	120	30	7	-	157
VI. Lower limbs (excluding feet) (4)	-	-	-	3	-	3	-	-	-	-	-	-	1	-	1	-	-	-	-	-	-	-	-	-	-	-	35	10	4	-	49		
VII. Feet	-	-	-	3	-	3	-	-	-	-	-	-	2	-	2	-	-	-	-	-	-	-	-	-	-	-	34	11	5	-	50		
VIII. Multiple locations	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7	3	-	-	10		
IX. Not specified	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
TOTAL	-	-	-	11	1	12	-	-	-	-	-	-	6	-	6	-	-	-	-	-	-	-	-	-	-	3	-	3	284	63	20	1	368

(1) Number of hours worked by pit staff and employees of contractor firms who belong to a miner's social insurance scheme.

(2) Including complications

(3) The shoulders and the wrists are included under „upper limbs“.

(4) The hips and the ankles are included under „Lower limbs“.

(5) Calendar days

MINES SAFETY AND HEALTH COMMISSION

Common Statistics on victims of accidents underground in coal mines

DETAILED BREAKDOWN OF VICTIMS ACCORDING TO LOCATION AND NATURE OF INJURY AND PERIOD OF INCAPACITY

Table 2b

(Frequency rates)

COUNTRY: NETHERLANDS
COAL-FIELD: SOUTH-LIMBOURG

YEAR: 1974
MAN-HOURS WORKED (1): 1.920.640

NATURE OF THE INJURY	Amputations and enucleations 1			Fractures with or without dislocation 2			Luxations, twist and sprains 3			Concussion and internal injury 4			Open wounds contusion and muscular abrasions 5			Burns and harmful effects of electricity and radiation 6			Poisoning and suffocation 7			Multiple injuries of those not specified (2) 8			TOTAL 9								
	> 56 days (3)	Fatal accidents	total	> 56 days (3)	Fatal accidents	total	> 56 days (3)	Fatal accidents	total	> 56 days (3)	Fatal accidents	total	> 56 days (3)	Fatal accidents	total	> 56 days (3)	Fatal accidents	total	> 56 days (3)	Fatal accidents	total	4 to 20 days (3)	21 to 56 days (3)	> 56 days (3)	Fatal accidents	total							
PERIOD OF INCAPACITY																																	
LOCATION OF THE INJURY																																	
I. Head and neck	-	-	-	-	0,52	0,52	-	-	-	-	-	-	0,52	-	0,52	-	-	-	-	-	-	-	-	-	-	-	15,62	0,52	0,52	0,52	17,13		
II. Eyes	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10,93	1,04	-	-	11,93		
III. Trunk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0,52	-	0,52	10,93	0,52	0,52	-	11,98
IV. Upper limbs (excluding the hands) (3)	-	-	-	0,52	-	0,52	-	-	-	-	-	-	0,52	-	0,52	-	-	-	-	-	-	-	-	-	-	-	8,33	2,60	1,04	-	11,98		
V. Hands	-	-	-	2,08	-	2,08	-	-	-	-	-	-	0,52	-	0,52	-	-	-	-	-	-	-	-	-	-	1,04	-	1,04	62,45	15,62	3,65	-	1,74
VI. Lower limbs (excluding feet) (4)	-	-	-	1,56	-	1,56	-	-	-	-	-	-	0,52	-	0,52	-	-	-	-	-	-	-	-	-	-	-	18,22	5,21	2,08	-	25,51		
VII. Feet	-	-	-	1,56	-	1,56	-	-	-	-	-	-	1,04	-	1,04	-	-	-	-	-	-	-	-	-	-	-	17,70	5,73	2,60	-	26,03		
VIII. Multiple locations	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3,65	1,56	-	-	5,21			
IX. Not specified	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
TOTAL	-	-	-	5,73	0,52	6,25	-	-	-	-	-	-	3,12	-	3,12	-	-	-	-	-	-	-	-	-	-	1,56	-	1,56	147,	32,80	10,41	0,52	191,60

(1) Number of hours worked by pit staff and employees of contractor firms who belong to a miner's social insurance scheme.

(2) including complications.

(3) The shoulders and the wrists are included under „upper limbs“.

(4) The hips and the ankles are included under „Lower limbs“.

(5) Calendar days

MINES SAFETY AND HEALTH COMMISSION

Common Statistics on victims of accidents underground in coal mines

DETAILED BREAKDOWN OF ACCIDENT VICTIMS ACCORDING TO CAUSE AND SITE OF ACCIDENT AND PERIOD OF INCAPACITY

(absolute figures)

COUNTRY UNITED KINGDOM
COAL-FIELD

YEAR 1974
MAN-HOURS WORKED (1) 268 166 475

Table 1a

SITE OF THE ACCIDENT CAUSES OF ACCIDENTS	Production faces 1					Headings excluding shafts and staple-pits 2					Shafts and staple-pits 3					Other places 4					Total of accidents underground 5					Group accidents (2) 6		
	Period of incapacity	4 to 20 days (3)	21 to 56 days (3)	> 56 days (3)	Fatal accidents	total	4 to 20 days (3)	21 to 56 days (3)	> 56 days (3)	Fatal accidents	total	4 to 20 days (3)	21 to 56 days (3)	> 56 days (3)	Fatal accidents	total	4 to 20 days (3)	21 to 56 days (3)	> 56 days (3)	Fatal accidents	total	4 to 20 days (3)	21 to 56 days (3)	> 56 days (3)	Fatal accidents	total	56 days (3)	Fatal accidents
I. FALLS OF GROUNDS AND ROCKS	-	-	46	7	53	-	-	21	3	24	-	-	-	-	-	-	-	13	3	16	-	-	80	13	93	-	-	-
II. TRANSPORT, TOTAL	-	-	21	-	21	-	-	5	-	5	-	-	-	-	-	-	-	158	11	169	-	-	184	11	195	-	-	-
a) Continuous Transport	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
b) Discontinuous Transport	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
III. FALLS AND MOVEMENT OF THE VICTIM, TOTAL	-	-	6	-	6	-	-	2	-	2	-	-	2	-	2	-	-	46	2	48	-	-	56	2	58	-	-	-
a) while moving about the mine	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
b) in the course of other activities	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IV. MACHINES, TOOLS AND SUPPORTS TOTAL	-	-	48	6	54	-	-	6	-	6	-	-	1	-	1	-	-	9	2	11	-	-	64	8	72	-	-	-
a) Machines	-	-	27	5	32	-	-	4	-	4	-	-	-	-	-	-	-	5	1	6	-	-	36	6	42	-	-	-
b) Tools	-	-	4	-	4	-	-	1	-	1	-	-	1	-	1	-	-	4	1	5	-	-	10	1	11	-	-	-
c) Supports	-	-	17	1	18	-	-	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	18	1	19	-	-	-
V. FALLS OF OBJECTS	-	-	2	1	3	-	-	-	-	-	-	-	2	-	2	-	-	6	-	6	-	-	10	1	11	-	-	-
VI. EXPLOSIVES	-	-	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	3	-	3	-	-	4	-	4	-	-	-
VII. IGNITIONS OR EXPLOSIONS OF FIREDAMP AND COAL DUST	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VIII. OUTBURSTS OF GAS, DE-OXYGENATION, SUFFOCATION OR POISONING BY NATURAL GASES (CO ₂ , CH ₄ , CO, H ₂ S), TOTAL	-	-	-	-	-	-	-	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	1	-	1	-	-	-
a) Outbursts of Gas	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
b) De-oxygenation and Poisoning by natural Gases	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IX. HEATINGS OR FIRES	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
X. INRUSHES	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
XI. ELECTRICITY	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	1	-	-	1	-	1	-	-	-
XII. OTHER CAUSES	-	-	2	-	2	-	-	-	-	-	-	-	3	1	4	-	-	12	1	13	-	-	17	2	19	-	-	-
TOTAL	-	-	126	14	140	-	-	35	3	38	-	-	8	1	9	-	-	248	19	267	-	-	417	37	454	-	-	-

(1) Number of hours worked by pit staff and employees of contractor firms who belong to a miners' social insurance scheme.

(2) Accidents involving more than five casualties (i.e. who either died or were unable to resume work underground for at least eight weeks)

(3) Calendar days

MINES SAFETY AND HEALTH COMMISSION

Common Statistics on victims of accidents underground in coal mines

DETAILED BREAKDOWN OF ACCIDENT VICTIMS ACCORDING TO CAUSE AND SITE OF ACCIDENT AND PERIOD OF INCAPACITY

(frequency rates)

COUNTRY UNITED KINGDOM
COAL-FIELD

YEAR 1974
MAN-HOURS WORKED (1) 268 166 475

Table 1b

SITE OF THE ACCIDENT CAUSES OF ACCIDENTS	Period of incapacity	Production faces 1					Headings excluding shafts and staple-pits 2					Shafts and staple-pits 3					Other places 4					Total of accidents underground 5					Group accidents (2) 6		
		4 to 20 days (3)	21 to 56 days (3)	> 56 days (3)	Fatal accidents	total	4 to 20 days (3)	21 to 56 days (3)	> 56 days (3)	Fatal accidents	total	4 to 20 days (3)	21 to 56 days (3)	> 56 days (3)	Fatal accidents	total	4 to 20 days (3)	21 to 56 days (3)	> 56 days (3)	Fatal accidents	total	4 to 20 days (3)	21 to 56 days (3)	> 56 days (3)	Fatal accidents	total	56 days (3)	Fatal accidents	total
I. FALLS OF GROUNDS AND ROCKS		-	-	0.172	0.028	0.198	-	-	0.078	0.011	0.089	-	-	-	-	-	-	-	0.048	0.011	0.059	-	-	0.298	0.048	0.346	-	-	-
II. TRANSPORT, TOTAL		-	-	0.078	-	0.078	-	-	0.019	-	0.019	-	-	-	-	-	-	-	0.589	0.041	0.630	-	-	0.686	0.041	0.727	-	-	-
a) Continuous Transport		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
b) Discontinuous Transport		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
III. FALLS AND MOVEMENT OF THE VICTIM, TOTAL		-	-	0.022	-	0.022	-	-	0.007	-	0.007	-	-	0.007	-	0.007	-	-	0.172	0.007	0.179	-	-	0.208	0.007	0.215	-	-	-
a) while moving about the mine		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
b) in the course of other activities		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IV. MACHINES, TOOLS AND SUPPORTS TOTAL		-	-	0.179	0.022	0.201	-	-	0.022	-	0.022	-	-	0.004	-	0.004	-	-	0.034	0.008	0.042	-	-	0.239	0.030	0.268	-	-	-
a) Machines		-	-	0.101	0.018	0.119	-	-	0.015	-	0.015	-	-	-	-	-	-	-	0.019	0.004	0.023	-	-	0.135	0.022	0.157	-	-	-
b) Tools		-	-	0.015	-	0.015	-	-	0.004	-	0.004	-	-	0.004	-	0.004	-	-	0.015	-	0.019	-	-	0.038	0.004	0.042	-	-	-
c) Supports		-	-	0.063	0.004	0.067	-	-	0.004	-	0.004	-	-	-	-	-	-	-	-	-	-	-	-	0.067	0.004	0.071	-	-	-
V. FALLS OF OBJECTS		-	-	0.008	0.004	0.012	-	-	-	-	-	-	-	0.007	-	0.007	-	-	0.022	-	0.022	-	-	0.037	0.004	0.041	-	-	-
VI. EXPLOSIVES		-	-	0.004	-	0.004	-	-	-	-	-	-	-	-	-	-	-	-	0.011	-	0.011	-	-	0.015	-	0.015	-	-	-
VII. IGNITIONS OR EXPLOSIONS OF FIREDAMP AND COAL DUST		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VIII. OUTBURSTS OF GAS, DE-OXYGENATION, SUFFOCATION OR POISONING BY NATURAL GASES (CO ₂ , CH ₄ , CO, H ₂ S), TOTAL		-	-	-	-	-	-	-	0.004	-	0.004	-	-	-	-	-	-	-	-	-	-	-	-	0.004	-	0.004	-	-	-
a) Outbursts of Gas		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
b) De-oxygenation and Poisoning by natural Gases		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IX. HEATINGS OR FIRES		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
X. INRUSHES		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
XI. ELECTRICITY		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.004	-	0.004	-	-	0.004	-	0.004	-	-	-
XII. OTHER CAUSES		-	-	0.007	-	0.007	-	-	-	-	-	-	-	0.011	0.004	0.015	-	-	0.045	0.004	0.049	-	-	0.063	0.008	0.071	-	-	-
TOTAL		-	-	0.470	0.052	0.522	-	-	0.131	0.011	0.142	-	-	0.029	0.004	0.033	-	-	0.925	0.071	0.996	-	-	1.555	0.138	1.693	-	-	-

(1) Number of hours worked by pit staff and employees of contractor firms who belong to a miners' social insurance scheme.

(2) Accidents involving more than five casualties (i.e. who either died or were unable to resume work underground for at least eight weeks).

(3) Calendar days.

**DETAILED BREAKDOWN OF VICTIMS ACCORDING TO LOCATION
AND NATURE OF INJURY AND PERIOD OF INCAPACITY**

COUNTRY UNITED KINGDOM
COAL-FIELD

(absolute figures)

YEAR 1974
MAN-HOURS WORKED (1) 268,166,475

NATURE OF THE INJURY	Amputations and enucleations 1			Fractures with or without dislocation 2			Luxations, twist and sprains 3			Concussion and internal injury 4			Open wounds contusion and muscular abrasions 5			Burns and harmful effects of electricity and radiation 6			Poisoning and suffocation 7			Multiple injuries of those not specified (2) 8			TOTAL 9				
	> 56 days (3)	Fatal acci-dents	total	> 56 days (3)	Fatal acci-dents	total	> 56 days (3)	Fatal acci-dents	total	> 56 days (3)	Fatal acci-dents	total	> 56 days (5)	Fatal acci-dents	total	> 56 days (5)	Fatal acci-dents	total	> 56 days (5)	Fatal acci-dents	total	> 56 days (5)	Fatal acci-dents	total	4 to 20 days (4)	21 to 56 days (4)	> 56 days (4)	Fatal acci-dents	total
LOCATION OF THE INJURY																													
I. Head and neck	-	-	-	23	9	32	-	-	-	-	2	2	-	-	-	-	-	-	-	-	-	-	1	1	-	-	23	12	35
II. Eyes	2	-	2																			1	-	1			3	-	3
III. Trunk	-	-	-	37	7	44	-	-	-	3	4	7	-	-	-	-	-	-	-	-	-	1	5	6	-	-	41	16	57
IV. Upper limbs (excluding the hands) (2)	-	-	-	93	-	93	24	-	24													1	-	1			118	-	118
V. Hands	10	-	10	-	-	-	-	-	-							1	-	1				-	-	-			11	-	11
VI. Lower limbs (excluding feet) (4)	7	-	7	199	2	201	1	-	1																		207	2	209
VII. Feet	7	-	7	-	-	-	-	-	-																		7	-	7
VIII. Multiple locations	-	-	-	6	-	6	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-						6	1	7
IX. Not specified																			1	5	6	-	1	1			1	6	7
TOTAL	26	-	26	358	18	376	25	-	25	3	7	10	-	-	-	1	-	1	1	5	6	3	7	10	-	-	417	37	454

(1) Number of hours worked by pit staff and employees of contractor firms who belong to a miner's social insurance scheme.
(2) Including complications.
(3) The shoulders and the wrists are included under „upper limbs“.
(4) The hips and the ankles are included under „Lower limbs“.
(5) Calendar days.

DETAILED BREAKDOWN OF VICTIMS ACCORDING TO LOCATION
AND NATURE OF INJURY AND PERIOD OF INCAPACITY

COUNTRY UNITED KINGDOM
COAL-FIELD

(Frequency rates)
RATES PER MILLION MAN-HOURS WORKED

YEAR 1974
MAN-HOURS WORKED (1) 268,166,475

NATURE OF THE INJURY	Amputations and enucleations 1			Fractures with or without dislocation 2			Luxations, twist and sprains 3			Concussion and internal injury 4			Open wounds contusion and muscular abrasions 5			Burns and harmful effects of electricity and radiation 6			Poisoning and suffocation 7			Multiple injuries of those not specified (2) 8			TOTAL 9				
	> 56 days (3)	Fatal accidents	total	> 56 days (3)	Fatal accidents	total	> 56 days (3)	Fatal accidents	total	> 56 days (3)	Fatal accidents	total	> 56 days (3)	Fatal accidents	total	> 56 days (3)	Fatal accidents	total	> 56 days (3)	Fatal accidents	total	4 to 20 days (3)	21 to 56 days (3)	> 56 days (3)	Fatal accidents	total			
PERIOD OF INCAPACITY																													
LOCATION OF THE INJURY																													
I. Head and neck	-	-	-	0.086	0.034	0.120	-	-	-	-	0.007	0.007	-	-	-	-	-	-	-	-	-	-	0.004	0.004	-	-	0.086	0.045	0.131
II. Eyes	0.007	-	0.007																			0.004	-	0.004	-	-	0.011	-	0.011
III. Trunk	-	-	-	0.138	0.026	0.164	-	-	-	0.011	0.015	0.026	-	-	-	-	-	-	-	-	-	0.004	0.019	0.023	-	-	0.153	0.060	0.213
IV. Upper limbs (excluding the hands) (3)	-	-	-	0.347	-	0.347	0.089	-	0.089													0.004	-	0.004	-	-	0.440	-	0.440
V. Hands	0.037	-	0.037	-	-	-	-	-	-							0.004	-	0.004				-	-	-	-	-	0.041	-	0.041
VI. Lower limbs (excluding feet) (4)	0.026	-	0.026	0.742	0.007	0.749	0.004	-	0.004													-	-	-	-	-	0.772	0.007	0.779
VII. Feet	0.026	-	0.026	-	-	-	-	-	-													-	-	-	-	-	0.026	-	0.026
VIII. Multiple locations	-	-	-	0.022	-	0.022	-	-	-	-	0.004	0.004	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.022	0.004	0.026
IX. Not specified																			0.004	0.018	0.022	-	0.004	0.004	-	-	0.004	0.022	0.026
TOTAL	0.096	-	0.096	1.335	0.067	1.402	0.093	-	0.093	0.011	0.026	0.037	-	-	-	0.004	-	0.004	0.004	0.018	0.022	0.012	0.027	0.039	-	-	1.555	0.138	1.693

(1) Number of hours worked by pit staff and employees of contractor firms who belong to a miner's social insurance scheme

(2) Including complications.

(3) The shoulders and the wrists are included under „upper limbs“.

(4) The hips and the ankles are included under „Lower limbs“.

(5) Calendar days.

MINES SAFETY AND HEALTH COMMISSION

Common Statistics on victims of accidents underground in coal mines

DETAILED BREAKDOWN OF ACCIDENT VICTIMS ACCORDING TO CAUSE AND SITE OF ACCIDENT AND PERIOD OF INCAPACITY

(absolute figures)

YEAR
MAN-HOURS WORKED (1)

1974
313 582 027

Table 1a

SITE OF THE ACCIDENT CAUSES OF ACCIDENTS	Production faces 1					Headings excluding shafts and staple-pits 2					Shafts and staple-pits 3					Other places 4					Total of accidents underground 5					Group accidents (2) 6		
	Period of incapacity	4 to 20 days (3)	21 to 56 days (3)	> 56 days (3)	Fatal accidents	total	4 to 20 days (3)	21 to 56 days (3)	> 56 days (3)	Fatal accidents	total	4 to 20 days (3)	21 to 56 days (3)	> 56 days (3)	Fatal accidents	total	4 to 20 days (3)	21 to 56 days (3)	> 56 days (3)	Fatal accidents	total	4 to 20 days (3)	21 to 56 days (3)	> 56 days (3)	Fatal accidents	total	56 days (3)	Fatal accidents
I. FALLS OF GROUNDS AND ROCKS	6840	2727	884	22	10473	3599	1340	381	10	5330	49	15	3	1	68	456	143	32	2	633	10944	4225	1300	35	16504	-	-	-
II. TRANSPORT, TOTAL	232	146	79	1	458	826	535	350	13	1724	137	87	42	4	270	479	261	128	7	875	1674	1029	599	25	3327	-	-	-
a) Continuous Transport	180	116	47	1	344	247	155	89	5	496	4	3	-	-	7	104	46	26	2	178	535	320	162	8	1025	-	-	-
b) Discontinuous Transport	52	30	32	-	114	579	380	261	8	1228	133	84	42	4	263	375	215	102	5	697	1139	709	437	17	2302	-	-	-
III. FALLS AND MOVEMENT OF THE VICTIM, TOTAL	1672	910	231	3	2816	4426	2363	691	4	7484	321	209	59	8	597	1264	675	238	-	2177	7683	4157	1219	15	13074	-	-	-
a) while moving about the mine	535	294	89	-	918	1033	465	170	-	1668	77	29	7	2	115	786	439	138	-	1363	2431	1227	404	2	4064	-	-	-
b) in the course of other activities	1137	616	142	3	1898	3393	1898	521	4	5816	244	180	32	6	482	478	236	100	-	814	5252	2930	815	13	9010	-	-	-
IV. MACHINES, TOOLS AND SUPPORTS TOTAL	2861	1387	342	6	4596	1795	764	188	-	2747	85	25	7	-	117	632	260	84	-	976	5373	2436	621	6	8436	-	-	-
a) Machines	390	169	74	2	635	249	105	38	-	392	21	7	-	-	28	139	65	24	-	228	799	346	136	2	1283	-	-	-
b) Tools	1032	428	103	-	1563	954	406	84	-	1444	44	16	6	-	66	321	137	37	-	495	2351	987	230	-	3568	-	-	-
c) Supports	1439	790	165	4	2398	592	243	66	-	911	20	2	1	-	23	172	58	23	-	253	2223	1103	255	4	3585	-	-	-
V. FALLS OF OBJECTS	3190	1556	506	6	5258	3082	1331	413	3	4829	202	95	37	1	335	1237	576	180	2	1995	7712	3558	1136	12	12418	-	-	-
VI. EXPLOSIVES	2	2	-	-	4	1	1	2	-	4	-	-	-	-	-	2	-	-	-	2	5	3	2	-	10	-	-	-
VII. IGNITIONS OR EXPLOSIONS OF FIREDAMP AND COAL DUST	-	-	-	11	11	-	-	-	7	7	-	-	-	-	-	1	-	6	24	31	1	-	6	42	49	-	-	-
VIII. OUTBURSTS OF GAS, DE-OXYGENATION, SUFFOCATION OR POISONING BY NATURAL GASES (CO ₂ , CH ₄ , CO, H ₂ S), TOTAL	7	-	-	-	7	1	1	-	-	2	-	-	-	-	-	2	-	-	-	2	11	1	-	-	12	-	-	-
a) Outbursts of Gas	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
b) De-oxygenation and Poisoning by natural Gases	7	-	-	-	7	1	1	-	-	2	-	-	-	-	-	2	-	-	-	2	11	1	-	-	12	-	-	-
IX. HEATINGS OR FIRES	1	-	-	-	1	2	1	-	-	3	-	-	-	-	-	1	-	2	1	4	4	1	2	1	8	-	-	-
X. INRUSHES	4	-	-	-	4	1	-	-	-	1	-	-	-	-	-	2	-	-	-	2	7	-	-	-	7	-	-	-
XI. ELECTRICITY	1	-	-	-	1	7	9	2	-	18	-	-	-	-	-	2	11	1	-	14	10	20	3	-	33	-	-	-
XII. OTHER CAUSES	433	133	47	4	617	551	225	73	2	851	79	27	15	1	122	310	60	31	-	401	1373	445	166	7	1991	-	-	-
TOTAL	15243	6861	2089	53	24246	14291	6570	2100	39	23000	873	458	163	15	1509	4388	1986	702	36	7112	34797	15875	5054	143	55869	-	-	-

(1) Number of hours worked by pit staff and employees of contractor firms who belong to a miners' social insurance scheme.

(2) Accidents involving more than five casualties (i.e. who either died or were unable to resume work underground for at least eight weeks).

(3) Calendar days

MINES SAFETY AND HEALTH COMMISSION

Common Statistics on victims of accidents underground in coal mines

DETAILED BREAKDOWN OF ACCIDENT VICTIMS ACCORDING TO CAUSE AND SITE OF ACCIDENT AND PERIOD OF INCAPACITY

(frequency rates)

YEAR 1974
MAN-HOURS WORKED (1) 313 582 027

Table 1b

COUNTRY
COAL-FIELD

SITE OF THE ACCIDENT CAUSES OF ACCIDENTS	Production faces 1					Headings excluding shafts and staple-pits 2					Shafts and staple-pits 3					Other places 4					Total of accidents underground 5					Group accidents (2) 6		
	Period of incapacity																											
	4 to 20 days (3)	21 to 56 days (3)	> 56 days (3)	Fatal accidents	total	4 to 20 days (3)	21 to 56 days (3)	> 56 days (3)	Fatal accidents	total	4 to 20 days (3)	21 to 56 days (3)	> 56 days (3)	Fatal accidents	total	4 to 20 days (3)	21 to 56 days (3)	> 56 days (3)	Fatal accidents	total	4 to 20 days (3)	21 to 56 days (3)	> 56 days (3)	Fatal accidents	total	56 days (3)	Fatal accidents	total
I. FALLS OF GROUNDS AND ROCKS	21.81	8.70	2.82	0.07	33.40	11.48	4.27	1.22	0.03	17.00	0.16	0.05	0.01	0.004	0.22	1.46	0.46	0.10	0.007	2.02	34.90	13.47	4.15	0.11	52.63	-	-	-
II. TRANSPORT, TOTAL	0.74	0.47	0.25	-	1.46	2.63	1.71	1.12	0.04	5.50	0.44	0.28	0.13	0.01	0.86	1.53	0.83	0.41	0.02	2.79	5.34	3.28	1.91	0.08	10.61	-	-	-
a) Continuous Transport	0.57	0.37	0.15	-	1.09	0.79	0.50	0.28	0.02	1.58	0.01	0.01	-	-	0.02	0.33	0.15	0.08	0.007	0.57	1.71	1.02	0.52	0.03	3.27	-	-	-
b) Discontinuous Transport	0.17	0.10	0.10	-	0.37	1.85	1.21	0.83	0.03	3.92	0.43	0.27	0.13	0.01	0.84	1.20	0.69	0.33	0.02	2.22	3.63	2.26	1.39	0.06	7.34	-	-	-
III. FALLS AND MOVEMENT OF THE VICTIM, TOTAL	5.33	2.90	0.74	0.01	8.98	14.11	7.54	2.20	0.01	23.86	1.02	0.67	0.19	0.03	1.90	4.03	2.15	0.76	-	6.94	24.50	13.26	3.89	0.05	41.69	-	-	-
a) while moving about the mine	1.71	0.94	0.28	0.007	2.93	3.30	1.48	0.54	-	5.32	0.25	0.09	0.02	0.007	0.37	2.51	1.40	0.44	-	4.35	7.75	3.91	1.29	0.007	12.96	-	-	-
b) in the course of other activities	3.62	1.96	0.45	0.01	6.05	10.82	6.05	1.66	0.01	18.54	0.78	0.57	0.17	0.02	1.54	1.52	0.75	0.32	-	2.60	16.75	9.34	2.60	0.04	28.73	-	-	-
IV. MACHINES, TOOLS AND SUPPORTS TOTAL	9.12	4.42	1.09	0.02	14.65	5.73	2.44	0.60	-	8.76	0.27	0.08	0.02	-	0.37	2.02	0.83	0.27	-	3.11	17.14	7.77	1.98	0.02	26.90	-	-	-
a) Machines	1.24	0.54	0.24	-	2.02	0.79	0.34	0.12	-	1.25	0.07	0.02	-	-	0.09	0.44	0.21	0.08	-	0.73	2.55	1.10	0.43	0.007	4.09	-	-	-
b) Tools	3.29	1.36	0.33	-	4.98	3.04	1.30	0.27	-	4.61	0.14	0.05	0.02	-	0.21	1.02	0.44	0.12	-	1.58	7.50	3.15	0.73	-	11.38	-	-	-
c) Supports	4.59	2.52	0.53	0.01	7.65	1.89	0.81	0.21	-	2.91	0.06	0.007	0.004	-	0.07	0.55	0.19	0.07	-	0.81	7.09	3.52	0.81	0.01	11.43	-	-	-
V. FALLS OF OBJECTS	10.17	4.96	1.61	0.02	16.76	9.83	4.25	1.32	0.01	15.40	0.65	0.30	0.12	0.004	1.07	3.95	1.84	0.57	0.007	6.36	24.59	11.35	3.62	0.04	39.60	-	-	-
VI. EXPLOSIVES	0.007	0.007	-	-	0.01	0.004	0.004	0.007	-	0.013	-	-	-	-	-	0.007	-	-	-	0.007	0.02	0.01	0.007	-	0.03	-	-	-
VII. IGNITIONS OR EXPLOSIONS OF FIRE DAMP AND COAL DUST	-	-	-	0.03	0.03	-	-	-	0.02	0.02	-	-	-	-	-	0.004	-	0.02	0.08	0.10	0.004	-	0.02	0.13	0.16	-	-	-
VIII. OUTBURSTS OF GAS, DE-OXYGENATION, SUFFOCATION OR POISONING BY NATURAL GASES (CO ₂ , CH ₄ , CO, H ₂ S), TOTAL	0.02	-	-	-	0.02	0.004	0.004	-	-	0.007	-	-	-	-	-	0.007	-	-	-	0.007	0.04	0.004	-	-	0.04	-	-	-
a) Outbursts of Gas	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
b) De-oxygenation and Poisoning by natural Gases	0.02	-	-	-	0.02	0.004	0.004	-	-	0.007	-	-	-	-	-	0.007	-	-	-	0.007	0.04	0.004	-	-	0.04	-	-	-
IX. HEATINGS OR FIRES	0.004	-	-	-	0.004	0.007	0.004	-	-	0.01	-	-	-	-	-	0.004	-	0.007	0.004	0.01	0.01	0.004	0.007	0.004	0.03	-	-	-
X. INRUSHES	0.01	-	-	-	0.01	0.004	-	-	-	0.004	-	-	-	-	-	0.007	-	-	-	0.007	0.02	-	-	-	0.02	-	-	-
XI. ELECTRICITY	0.004	-	-	-	0.004	0.02	0.03	0.007	-	0.06	-	-	-	-	-	0.007	0.04	0.004	-	0.05	0.03	0.06	0.01	-	0.11	-	-	-
XII. OTHER CAUSES	1.38	0.42	0.15	0.01	0.96	1.76	0.72	0.23	0.007	2.71	0.25	0.09	0.05	0.004	0.39	0.99	0.19	0.10	-	1.28	4.38	1.42	0.53	0.02	6.35	-	-	-
TOTAL	48.61	21.88	6.66	0.17	77.32	45.57	20.95	6.70	0.13	73.35	2.78	1.46	0.52	0.05	4.81	13.99	6.33	2.24	0.12	22.68	110.97	50.63	16.12	0.456	178.17	-	-	-

(1) Number of hours worked by pit staff and employees of contractor firms who belong to a miners' social insurance scheme.

(2) Accidents involving more than five casualties (i.e. who either died or were unable to resume work underground for at least eight weeks)

(3) Calendar days

DECISION (1)
OF 9 JULY, 1957
CONCERNING THE TERMS OF REFERENCE AND RULES
OF PROCEDURE OF THE MINES SAFETY COMMISSION

(1) See "Journal officiel de la Communauté européenne du charbon et de l'acier" no. 28 of the 31st August 1957

COUNCIL OF MINISTERS

DECISION

of 9 July 1957

concerning the terms of reference and rules
of procedure of the Mines Safety Commission

Having taken note of the Recommendations adopted by the Conference on Safety in Coalmines and of the proposals submitted by the High Authority in connection with the Conference's final Report, which afford a working basis for the improvement of safety in coalmines, and

having regard to their Decisions at the Council's 36th and 42nd sessions on September 6, 1956 and on May 9 and 10, 1957, setting up the Mines Safety Commission,

THE REPRESENTATIVES OF THE GOVERNMENTS OF THE MEMBER STATES MEETING
AT THE SPECIAL COUNCIL OF MINISTERS,

- hereby lay down that the terms of reference of the aforesaid Commission shall be as follows:

1. The Commission shall follow developments regarding safety in coalmines, including those regarding the safety regulations instituted by the public authorities, and assemble the necessary information concerning progress and practical results obtained, more especially in the matter of accident prevention.

To secure the necessary information, the Commission shall apply to the Governments concerned.

The Commission shall evaluate the information in its possession and submit to the Governments proposals for the improvement of safety in coalmines.

2. The Commission shall help the High Authority to work out a method of compiling intercomparable accident statistics.
3. The Commission shall ensure the prompt forwarding to the quarters directly concerned (including in particular mines inspectorates and employers' and workers' associations) of relevant information assembled by it.
4. The Commission shall ascertain, by regular contact with the Governments, what action is being taken to implement the proposals of the Conference on Safety in Coalmines, and such proposals as it may itself draw up.
5. The Commission shall propose such study and research as it deems most indicated for the improvement of safety, with notes as to the way in which these can best be effected.
6. The Commission shall facilitate the exchange of information and experience among persons responsible for safety matters, and propose appropriate measures for this purpose (e.g. organization of study sessions, establishment of documentation services).
7. The Commission shall propose appropriate measures for ensuring the necessary liaison among the rescue services of the Community countries.

8. The Commission shall submit annually to the Council of Ministers and the High Authority a Report on its activities and on developments regarding safety in coalmines in the different member States. In this connection, it shall in particular examine the statistics compiled on accidents and incidents in coalmines.

- The Representatives of the Governments further lay down that the rules of procedure of the Commission shall be those set forth in the Annex to the present Decision.
- The Representatives of the Governments trust that the High Authority will arrange for the Commission to start work at the earliest possible moment.

This Decision was adopted by the Council at its forty-fourth session, on July 9, 1957.

For the Council,

J. REY

President.

RULES OF PROCEDURE
of the Mines Safety Commission

CHAIRMAN

Article 1

The Chairman of the Mines Safety Commission shall be a Member of the High Authority of the European Coal and Steel Community.

Article 2

The Chairman shall conduct the work of the Commission in accordance with these Rules of Procedure.

MEMBERS

Article 3 (1)

The Commission shall consist of 36 members appointed by the Governments; each country shall have four members, of whom two shall be representatives of that country's Governments, one of the employers and one of the workers.

Each Government shall send in writing to the Chairman a nominal roll of the members appointed by it. It shall notify the Chairman of all changes in this.

Each Government may appoint for any particular meeting of the Commission one or two advisers, whose names it shall send to the Chairman.

I.L.O. PARTICIPATION

Article 4

Representatives of the International Labour Organization shall be invited to attend the proceedings of the Commission in a consultative capacity.

ORGANIZATION

(a) Restricted Committee

Article 5

A Restricted Committee shall be set up, to consist of Governments representatives on the Commission.

Article 6

The Chairman of the Commission shall act as Chairman of the Restricted Committee.

Article 7

The function of the Restricted Committee shall be to ensure permanent liaison among the Governments of the member States and between them and the Commission, more especially for the purpose of exchanging relevant information. The Restricted Committee shall see to the preparation of the Commission's activities.

Article 8 (1)

The Restricted Committee shall be convened by the Chairman.

The Chairman shall be required to convene it when asked to do so by the representatives of five or more Governments.

(b) Working Parties

Article 9

The Commission of the Restricted Committee may set up Working Parties of experts to consider specific technical matters.

Article 10

The Working Parties shall decide their own *modus operandi*.

Article 11

The Restricted Committee shall be given reports by the Working Parties on the results of their proceedings, which it shall submit to the Commission with the comments of its members.

In the event of differences of opinion within the Working Parties, the views expressed shall be given, together with the names of those expressing them.

SECRETARIAT

Article 12 (1)

The High Authority shall be responsible for the secretarial arrangements in connection with the work of the Commission, the Restricted Committee and the Working Parties.

These arrangements shall be under the charge of a High Authority staff member appointed to act as Secretary.

All documents shall be in the six official languages of the Community.

WORKING PROCEDURE

Article 13

The Chairman shall fix the agenda and the dates of meetings after consultation with the members of the Restricted Committee.

Article 14 (1)

The Chairman shall allow to speak any member of the Commission or representative of the International Labour Organization asking to do so.

The Chairman may allow advisers to speak.

Article 15

The members of the High Authority shall have the right to attend meetings of the Commission and of the Restricted Committee, and to speak there.

The Chairman may bring with him advisers, whom he may allow to speak.

Article 16

Where the Commission or the Restricted Committee deems it desirable to obtain information concerning the various aspects of safety in coalmines, it shall request this from the Governments of the member States.

Article 17 (1)

24 members shall constitute a quorum. Conclusions shall be adopted by majority of the members present.

Proposals by the Commission under 1,3 of its terms of reference shall, however, require a vote in favour by two-thirds of the members present, and by not less than nineteen members in all.

Any dissenting opinions shall be brought to the attention of the Governments should the members expressing them so request.

(1) Amended having regard to decision of the Council of the European Communities of 1 January 1973 (Official Journal of the European Communities L2 of 1 January 1973).

THE COUNCIL

DECISION (1)

of March 11, 1965

of the Representatives of the Governments
of the Member States assembled in the Special
Council of Ministers to modify the decision
of July 9, 1957

concerning the terms of reference and rules
of procedure of the Mines Safety Commission

THE REPRESENTATIVES OF THE GOVERNMENTS OF THE MEMBER STATES ASSEMBLED
IN THE SPECIAL COUNCIL OF MINISTERS -

having regard to the decision of July 9, 1957 regarding the terms of
reference and rules of procedure of the Mines Safety Commission, and

having regard to the High Authority's proposal of January 7, 1964,
and

seeing that this decision in no way affects Article 118 of the Treaty
setting up the European Economic Community,

DECIDE:

Article 1

The terms of reference of the Mines Safety Commission laid down by the decision
of July 9, 1957 are replaced by the provisions in the annex.

Article 2

The provisions of Article 17 of the rules of procedure annexed to the Decision
of July 9, 1957 are replaced by the following provisions:

"Should the Mines Safety Commission or the Restricted Committee consider it
desirable to receive information regarding the various fields for which it is
responsible, it shall apply to the Governments of the member States."

This decision was adopted by the Council at its one-hundredth session, on
March 11, 1965.

For the Council

M. MAURICE-BOKANOWSKI

President

(1) See "Journal officiel de la Communauté européenne du charbon et de l'acier" no. 46
of 22nd March 1965.

ANNEX

TERMS OF REFERENCE FOR THE MINES SAFETY COMMISSION

1. The Commission shall follow developments regarding safety and measures to avoid at working-points conditions which represent a danger to health in coalmines, including to this end the safety regulations instituted by the public authorities and assemble the necessary information concerning progress and practical results obtained.

To secure the necessary information, the Commission shall apply to the Governments concerned.

The Commission shall evaluate the information in its possession and submit to the Governments proposals for the improvement of safety and health conditions in coalmines.

2. The Commission shall help the High Authority to work out a method of compiling inter-comparable statistics on accidents and damage to health attributable to vocational activities in coalmines.
3. The Commission shall ensure the prompt forwarding to the quarters directly concerned (including in particular mines inspectorates and employers' and workers' associations) of relevant information assembled by it.
4. The Commission shall ascertain, by regular contact with the Governments, what action is being taken to implement the proposals of the Conference on Safety in Coalmines, and such proposals as it may itself draw up.
5. The Commission shall propose such study and research as it deems most indicated for the improvement of safety, and of healthy working conditions in coalmines, with notes as to the way in which these can be effected.
6. The Commission shall facilitate the exchange of information and experience among persons responsible for safety matters and the maintenance of healthy working conditions, and propose appropriate measures for this purpose (e.g. organization of study sessions, establishment of documentation services).
7. The Commission shall propose appropriate measures for ensuring the necessary liaison among the rescue services of the Community countries.
8. The Commission shall submit annually to the Council of Ministers and the High Authority a Report on its activities and on developments regarding safety and protection of health in coalmines in the different member States. In this connection, it shall in particular examine the statistics compiled in these fields.

ANNEX III

TERMS OF REFERENCE OF THE VARIOUS WORKING PARTIES
OF THE MINES SAFETY AND HEALTH COMMISSION
(as at 31.12.1974)

I - Working Party on Electrification - Chairman Mr Stassen

Terms of reference

1. Comparing adopted safety and accident prevention provisions relating to:
 - (a) electric shock,
 - (b) fire hazard,
 - (c) explosion hazard.
2. Ascertaining the present position in Community countries with regard to safety regulations on underground electrical networks of low and medium voltage (up to 1 100 V) and feeder cables for movable equipment, with due regard to the specifications for the said cables.
3. Reporting on steps to be taken when work has to be carried out on electrical equipment under voltage.
4. Studying the construction of high-tension cables (of up to 6 000 V) used underground, and protective equipment.
5. Study of the problem of stray currents.
6. Periodic reports on oil-powered contactors used in gassy environments.
7. To follow the development of techniques designed to eliminate entirely the production of sparks on electrical contact lines (battery motors excluded) and in particular to take note of the new technique of traction by linear motors.
8. Investigation of the use of remote-control circuits in automated mining operations.
9. The Mines Safety and Health Commission instructs the Working Party on Electricity:
 - 1(i) to take due note of the results of the work of the CENELEC Committee of Experts entrusted with harmonizing the rules covering the design of electrical equipment for use in explosive atmosphere;
 - (ii) to examine the draft directive of the Commission of the European Communities dealing with the co-ordination in Member States of legislation on electrical equipment to be used in explosive atmosphere;
 - 2 to propose, if appropriate, modifications to the above documents to make them applicable to coal mines in countries of the European Community;
 - 3 to suggest the means by which harmonization of the certification procedures and reciprocal acceptance of the test methods and test certificates could be achieved;
 - 4 to compare the rules covering installation and use of underground electrical equipment now current in each to the Community countries, particularly in respect of the dangers of firedamp ignition; to ensure that the rules are uniform or to examine the equivalence of certain rules, so that such equipment can be used without modification in all the Community countries.

II - Working Party on Rescue Arrangements, Fires and Underground Combustion-
Chairman Mr Coenders

A. General terms of reference

(Art. 7 of the Terms of Reference of the Mines Safety and Health Commission)

Exchange of experience between the Community countries and the United Kingdom on:

1. Rescue operations and action against spontaneous combustion, heatings and fires on the occasion of accidents or other events underground requiring the assistance of rescue teams, from which useful lessons have been learned:
2. Organization of rescue operations underground and the presentation of reports every two years;
3. The prevention of spontaneous combustion, heatings and fire outbreaks underground, the fighting and control of spontaneous combustion, heatings and fires, and reopening sealed-off workings.

B. Special terms of reference

1. Comparison of practical arrangements of rescue operations existing in the Community countries and the United Kingdom and possibly the drafting of a standard plan of procedure for the Community as a whole.
2. Exchange of experience and practical knowledge in the following fields:
 - (a) methods and apparatus for the early detection of combustion, heatings and pit fires,
 - (b) CO self-rescuers,
 - (c) Oxygen deficiency warning devices,
 - (d) Fires in long plant,
 - (e) Sealing off abandoned workings,
 - (f) Specifications and testing conditions for fire-resistant fluids for mechanical power transmission.
3. Condensed comparative survey of new regulations and guidelines promulgated by the mining authorities of member countries and the United Kingdom on rescue arrangements, first aid and fire fighting and prevention.

C. Analysis of results (partial or overall) of research projects at present in progress so as to:

1. Improve borehole rescue techniques,
2. Define the standards to which flameproof clothing should conform.

D. Studies to be completed by the Group of Experts on Budryk's theory on the following subjects:

1. Extent of instability of diagonal ventilation roadways,
2. Effects of a fire on workings with descensional ventilation,
3. Resources to be applied to combat the danger of explosion during firefighting.

III - Working Party on Winding Ropes and Shaft Guides: Chairman Mr Martens

Terms of reference

1. Follow-up of progress made in the testing of winding ropes by means of appropri-

ate instruments in order to obtain information concerning its application in the mines of the Community and the United Kingdom.

2. Testing of couplings for circular and flattened winding ropes.
3. Arrangements for the installation and inspection of capels.
4. Testing of guides for winding cages in drafts and guide mechanisms for cable haulage in roadways.
5. Maintenance required to ensure safe operation of winding ropes and balance ropes.
6. Use of studies on the dynamic behaviour of shaft and roadway ropes.
7. Exchange of views on the properties operating conditions and strength of winding ropes of particular interest.
8. Discussion on accidents involving winding and hauling ropes and their couplings, which could provide new information.

IV - Working Party on Mining Accident Statistics: Chairman Mr Koch

Terms of reference

In order to enable the Mines Safety and Health Commission to draw conclusions on accident prevention, the frequency of underground accidents in the Community coal mines should be examined, with the following objectives:

1. To decide on suitable mathematical statistical systems,
2. To evaluate, with their aid, chronological differences in frequency together with differences from country to country or coalfield to coalfield.

V - Working Party on Combustible Dusts: Chairman Mr Delacote

Terms of reference

Taking into account the mechanism of dust combustion and of flame propagation and the various factors which may influence this, including the fact that methane is frequently involved in this phenomenon, the working party is instructed to carry out a study of precautions against dust combustion, in particular:

- (a) dust neutralization (dust control in situ, stone dusting, spraying, dust fixation by means of spreading salts and coagulating pastes, etc.), this study to include the comparative analysis of the regulations and instructions applied in the Community countries and the United Kingdom, along with the methods of application of the different processes,
- (d) dust barriers of various types to halt dust explosions, mixed dust-methane explosions and pure methane explosions.

The working party may make any suggestions for research work considered necessary to advance the knowledge of the phenomena studied and to promote safety in these fields.

VI - Working Party on Health in Coal Mines: Chairman Mr Wilson

Studying, from the standpoint of technical prevention and industrial medicine, the prevention of environmental risks to the health of workers in coal mines.

1. General directives concerning dust control methods where powered supports, underground crushers, coal cutting and getting and roadway drivage machinery is used.
2. Dust measurement (methods, frequency, measuring points, conclusions to be drawn etc.) and where necessary establishing a scale of comparison of the various methods employed.
3. Establishment of dustiness thresholds. Definition of categories of permissible dustiness. Steps to be taken when faced with various categories of dustiness.
4. Medical problems:
 - (a) Among the medical problems involved in the control of ambient health hazards to coal mine workers, priority must be given to the study of the following factors:
climate, noise, vibration, lighting, gas, etc.
 - (b) The Secretariat is to be instructed:
 - (i) to set up a medical consultative committee,
 - (ii) comparison of the provisions in force in the various countries concerning the organization of company medical services: selection and training of doctors, relations between medical services and technical departments and a list of the tasks and functions of industrial medicine,
 - (iii) a draft scheme to standardize pre-recruitment medical examinations, periodic checks and checks in special instances,
 - (iv) a draft scheme for a minimum degree of standardization in the detection of disorders and in the radiological supervision of workers as regards pneumoconiosis prevention,
 - (v) a draft scheme for standards and criteria in workings in which miners already suffering from a deterioration in pulmonary function do not run the risk of this deterioration progressing further.

VII - Working Party on Effects of Working Time on Safety at Work, especially in Difficult or Unhealthy Conditions: Chairman Mr Van der Hooft (1)

Terms of reference (suspended):

Number of hours worked in wet working points. Determining in what cases a working points is to be considered wet and the precautions to be taken.

VIII- Working Party on Psychological and Sociological Factors affecting Safety: Chairman Mr Schnase

Terms of reference

1. Community safety campaigns.
2. Recommendation on the employment of foreign and young workers.
3. Practical measures for the prevention of accidents, taking into account psychological and sociological factors.

IX - Working Party on Ventilation and Mine Gas - Chairman Mr CARVER

The Working Party on Ventilation and Mine Gas will examine general problems of ventilation, particularly where prevention of firedamp explosions is concerned and other means or measures should be applied in order to suppress or control firedamp.

(1) Mr VAN DER HOOFT died and has not been replaced

In addition to the study of firedamp explosions occurring in the Community and the United Kingdom, attention will also be devoted to usable results of research in the field of firedamp outbursts, in particular where maximum permissible levels in ventilation air of firedamp and other poisonous gases are concerned, and the advance estimation of firedamp emission before a working is started.

Attention will also be devoted to appropriate speeds for the flow of ventilation air, measures to be taken in the event of deceleration of the flow of air, measures for the stabilization of ventilation and the means and procedures for monitoring ventilation.

Priority will be given to examination of the procedures for a possible raising, either local or general, of the maximum permissible firedamp level in ventilation air streams from 1 to 1.50 or 2%, and measures to be applied in this event to ensure at least equivalent safety.

X - Working Party on 'Mechanization' - Chairman Mr Medaets

Taking into consideration current techniques in winning and roadway driving, linings and roadway conveyors, the working party is instructed to study particular ways of preventing accidents connected with mechanization.

In particular, it is to:

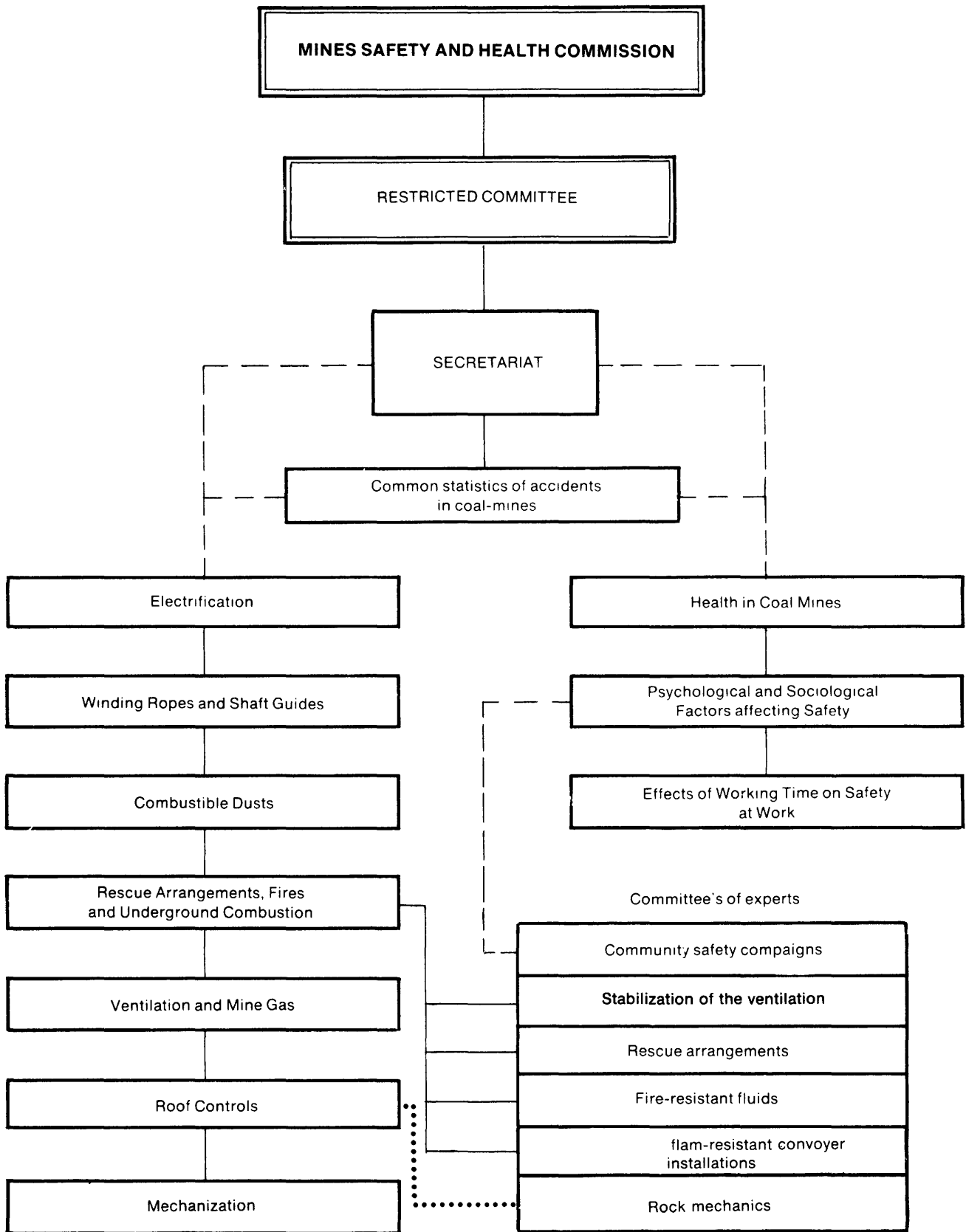
- (a) compile a schedule for machinery manufacturers of the minimum work safety requirements for mechanical protection of machines and equipment;
- (b) study safety provisions such as: visual and acoustic signalling, operating controls and in particular the ability to stop machines from any point on the face or roadway, taking account of modern means of telecommunication and remote control, electrical protection of motors in the event of overloading or jamming of equipment, lighting, etc.

XI - Working Party on 'Roof control' - Chairman Mr Carver

The Working Party is instructed to examine, by exchanging experience and evaluating the results of research, whether it is possible to draw up measures or practical directives for the prevention of falls of ground, taking into account the individual features of coal measures and workings.

1. In particular: In the interest of better roof control, particularly within the context of working schedules, it will study
 - (a) general measures to be taken into consideration in avoiding falls of ground, in the light of the type of measure and conditions of working, e.g. sequence of working the seams, features of the working areas (length, speed of advance, etc.), type and characteristics of the lining;
 - (b) specific measures to deal with individual difficulties which may or may not foreseeably arise in the long term, such as disturbance zones, protective banks, working of a face at right-angles to the end of an old seam, etc.
 - (c) specific measures to be taken when starting off a face in order to prevent abrupt subsidence of the roof.
2. It will also compare mining regulations on linings and draw up minimum roof control requirements, taking into account the characteristics of the various faces (overall seam thickness, dip, dead rock ...).

COMPOSITION OF THE MINES SAFETY AND HEALTH
COMMISSION AND ITS WORKING PARTIES
(AS AT 31.12.1974)



A - MINES SAFETY AND HEALTH COMMISSION

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Dott. C. MICHELAZZI, ispettore generale del ministero del lavoro e della previdenza sociale, via Flavia 6, Roma

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INTERNATIONAL LABOUR ORGANIZATION, Geneva

A representative of the International Labour Office sitting as an observer.

B - RESTRICTED COMMITTEE

The Restricted Committee consists of the Government members of the Mines Safety and Health Commission.

C - WORKING PARTIES

I. Working Party on Electrification (First semester)

- Members of the Working Party

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ANNEX V

CONDITIONS UNDER WHICH EXEMPTION MIGHT BE GRANTED
TO RAISE MAXIMUM PERMITTED CH₄ LIMITS IN MEMBER STATES

(Adopted by the Mines Safety and Health Commission on 15 November 1974 and submitted to the Governments of the Member States as a proposal following Article 1 of its terms of reference and for implementation and follow-up in accordance with Article 4 of those terms of reference)

1. Explanatory Notes

1.1. During the meeting held on 26.3.1971, the Mines Safety and Health Commission gave the Working Party on "Ventilation and Firedamp", among other things, the following terms of reference: (Doc. N° 202/1/71, Appendix 1).

"The Working Party on Ventilation and Firedamp will examine general problems of ventilation, particularly ways of preventing firedamp explosions by suitable ventilation techniques and other ways and means of controlling and combatting firedamp

.....Priority will be given to examination of possible ways of increasing the permissible CH₄ content of the air flow,¹⁾ generally or locally, from 1 % to 1.5 or 2 % and in such an event to the measures which should be prescribed to maintain at least equivalent safety standards."

1.2. The matters mentioned in the last part of these terms of reference are of particular importance to the coal-mining industry where, due to concentration of output, a high out-put per working district is required.

1.3. Cautious experiments have been carried out for more than ten years to see to what extent it would be possible to raise permissible firedamp limits while maintaining a safety level at least to that now existing.

1.4. These experiments coupled with research work²⁾⁺³⁾ which began in the Netherlands and then continued simultaneously in Belgium Germany and France, show that the objective can be achieved by taking measures described in the following section.

1) These are the various statutory limits established in the different countries of the Community regarding utilisation of electricity (CH₄ limits for cutting off electric energy) etc..

2) For research projects and results given financial aid by the ECSC, see Report of the Conference on "Control of firedamp emission in mines - Improving mine climate" 24 and 25 February 1971, EUR 4670. Attention is drawn to the fact that research work in this field has also been conducted in the United Kingdom.

3) Doc. n° 953/4/73 "Examination of the situation under which exemption can be given from regulations concerning the limits of firedamp concentrations in different countries of the European Community".

1.5. Concerning the United Kingdom it should be noted:

1.5.1. that legislation in the United Kingdom does not allow the use of electrical apparatus in atmospheres containing more than 1.25 per cent firedamp under any conditions.

1.5.2. nevertheless the United Kingdom is following with interest the experience of other countries especially as regards the continuous monitoring of firedamp.

1.5.3. experience in british mines with continous monitoring of firedamp has been for environmental monitoring directed also towards saving manpower.

2. Prerequisites for granting exemptions to maximum permitted CH₄ limits

2.1. As prerequisites for an exemption to be granted, an application containing detailed reasons must be submitted to the Mines Inspectorate. This must show that it is impossible to adhere to the CH₄ limits laid down in the General Regulations.

The CH₄ limit allowed in the exemption will be specified by the Mines Inspectorate.

2.2. These applications should be accompanied by the following documentation on investigations previously carried out:

2.2.1. A forecast¹⁾ of the emission of firedamp by the method best suited to the deposit concerned.

2.2.2. A ventilation forecast: adoption of a suitable method of ventilation; forecast of the air flow and air speed during the various phases of work planned; investigation of precautions to be taken to prevent predictable variations of the ventilation and to ensure sufficient ventilation with respect to the flow and direction of air. This forecast must take into account the minimum values mentionned in paragraph 3.4 for quantity and air speed.

2.2.3. Normally, firedamp drainage will be required.

An indication of the real or expected capture by the system should be provided except in the case where drainage is known to be impossible by the Mines Inspectorate.

1) see the report named in the footnote²⁾ on Page 1 Page 153 ff.

2.2.4. Details of the anticipated or proved effectiveness of other suitable methods for keeping firedamp out of ventilation system; e.g. slow and deep infusion of the coal, thereby slowing down¹⁾ desorption of the firedamp.

3. General conditions for raising maximum permissible CH₄ levels.

The conditions under which an exemption is granted are to be authorized by the Mines Inspectorate in accordance with the rules and regulations in force in the various Member States.

The regulations laid down by the Inspectorate, as they apply in formal cases, remain in force unless otherwise expressly stated in the exemption.

In particular, it should be pointed out that CH₄ monitoring with hand-held instruments prescribed by national regulations, is not to be discontinued where automatic CH₄ monitoring is used.

3.1. Automatic monitoring of the CH₄ content in the air flow, alarms.

3.1.1. Monitoring of CH₄ content in the air flow is obligatory.

Monitoring must be carried out

- automatically and
- continuously, with adequate frequency²⁾ by means of reliable and accurate equipments.

3.1.2. According to local requirements, readings should be monitored either centrally or locally. It should be specified whether all readings or only some must be recorded; e.g. whether recording is required in the case of readings from a measuring head located at the point where the full amount of firedamp emitted from the working area is mixed with the air current (in principle at the end of the return airway).

3.1.3. The way in which firedamp content is to be monitored must be clearly specified: Mean content in the air flow or local content.

1) see the Report named in the footnote Page 1, Pages 41/42, P.476, paragraph I and P.508, paragraph 3, and the paper by R. VANDELOISE "Absorption and Desorption of Methane etc...", report on the Conference on "Coal Research etc..." held in Luxemburg 8/9 December 1970, EUR 4641, Page 123 et seq.

2) see the report mentioned in the footnote²⁾ on Page 1, Page 357 et seq. and 377 et seq.

3.1.4. Furthermore, the following points are to be specified:

the locations of the points at which the CH₄ content must be monitored, as these points may vary according to the type of working and the wording of the exemption.

A CH₄ recorder may, in particular, be required at the return end of the face, at the electricity supply devices in the return airway if such devices exist and at the far end of the return airway as indicated in paragraph 3.1.2 .;

- 3.1.5. the frequency of the checks and calibration of the measuring heads of the automatic monitoring equipment;
- 3.1.6. In the case of failure of the automatic monitoring equipment the exemption should be suspended. If this failure concerns however only one measuring head and lasts less than 24 hours the exemption can be maintained under special conditions; these should include specifically intensified monitoring and measurements taken with hand-held instruments.
- 3.1.7. that a visual and/or acoustic alarm must be triggered off at a continuously manned location, if the permissible CH₄ limits are exceeded.¹⁾
- 3.2. Additional monitoring of the CH₄ content using hand held instruments. In certain cases, additional monitoring using hand held instruments²⁾ may be required in places where an increase in the CH₄ content is feared likely.
- 3.3. Switching on and off of electrical equipment and resumption of supplies³⁾.
- Should the maximum limits be exceeded, the instructions will specify:

1) See the Report mentioned in the footnote²⁾ on Page 1, Page 357 et seq and 377 et seq.

2) In addition to the routine measurements prescribed in the Mining Regulations

3) See the Report mentioned in the footnote²⁾ on Page 1, Page 357 ff and 377 ff.

- 3.3.1. When the maximum permitted CH₄ levels are exceeded, the electrical installations in the area in question should, if not intrinsically safe, cut out immediately and preferably automatically. Multi-powered (by electricity or compressed air) auxiliary fans might be recommended.
- 3.3.2. Resumption of power should be by manual operation only, by a specially appointed person or another person answerable to him, carrying out his instructions.
- 3.4. Ventilation Measures
 - 3.4.1. Care must be taken to ensure that the quantity of air and the minimum air speed are such that mixture of firedamp with air occurs, to prevent formation of CH₄ roof layers.
 - 3.4.2. When there is a risk of the occurrence of CH₄ roof layers, the air speed must be subject to continuous automatic monitoring, accompanied by warning lights and/or acoustic signals at a control point which is always manned.
- 3.5. Shot Firing operations
Shotfiring operations will remain subject to the regulations in force in the various countries.
- 3.6. Use of Light Alloys
No light alloys may be used where the use of such components would present an ignition hazard.
- 3.7. Use of Diesel Engines
In areas for which exemption is granted in respect of the admissible CH₄ content, Diesel engines can be used only if it is suitably ensured that no risks occur greater than in those districts where there is no exemption. No other risks should arise.

3.8. Evacuating the workings

Should the maximum CH₄ content in the general body of the air or localised areas be exceeded by a specific amount the working areas must be evacuated. An evacuation plan must be drawn up in advance, and the procedure for alerting personnel laid down. The importance should be stressed of a suitable, intrinsically safe, communications network, or of other warning devices.

3.9. Informing and instructing personnel

It must be laid down that personnel and possibly their representatives working in a ventilation circuit subject to an increase in CH₄ limits are to be adequately informed with the minimum delay.

Specific instructions are to be given to the supervisory officials and especially officials authorised to take action in the case of the maximum permissible limits being exceeded, or where evacuation is required.

3.10. Control by the Inspectorate

The various documents (Information) concerning the development of the working in sections which have benefited from an increase in the maximum permitted CH₄ levels, must be available to the officials of the local Inspectorate at all times.

4. Measures relating to the granting of exemptions to increase maximum permissible CH₄ levels in special cases.

In special cases, special compulsory measures must be laid down in addition to those mentioned in Chapter 3.

F I R S T R E P O R T

on Tests and Criteria of Flammability of conveyor belts with
fabric core used in mines of coal in the European Community Countries

(adopted by the Mines Safety and Health Commission on 15/11/1974
and submitted to the Governments of the Member States as a proposal
following Article 1 of its terms of reference and for implementation
and follow-up in accordance with Article 4 of those terms of reference)

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1. Introduction

1.1. In 1971, the Mines Safety and Health Commission, gave a mandate to the working party "Rescue Arrangements, Mine Fires and Underground Combustions" to improve the safety regarding fires of transport systems and particularly, conveyor belts.

1.2. The Working party has studied different cases of fires on conveyor belts, in the course of which the belt was completely burnt, although the belt satisfied the international safety standard ISO R 340. The working party arrived at the conclusion that the ISO R 340 standard was not adapted to the security needs of mines and charged a committee of experts to compare the standard of inflammability in force in the Community countries and to define new criteria of flammability, better adapted to underground conditions.

1.3. The group of experts obtained statistics of fires occurring in the member countries, from 1960 - 1972 in roadways equipped with belt conveyors, detailed in the synoptic table; Details of tests and methods of trying conveyor belting of different compositions used by member countries were also collected in a second synoptic table; in addition samples of belt from various countries were subjected to comparative tests and the proposals Item 5 result.

1.4. The following document is the first of a series of reports, the ultimate aim of which is to produce agreed testing methods and criteria of general application throughout the Community regarding the fire-resistance of all types of conveyor belt for use underground.

2. Statistics

2.1. The 1st Annex gives statistics relating to fires in mines involving conveyor belts from 1st January 1960 to 31st December 1972. As shown in these statistics, in the countries that now form the European Community, there were 472 fires, and in 194 cases, or 40 %, the fire is shown as having affected the belt. In several cases where the belt had satisfied only ISO R 340 standard, the fire had been propagated by the belt itself.

3. Standards of acceptance of conveyor belts used in coal mines of the European Community Countries

3.1. These requirements have been formed to take account of the following factors:

- The above statistics and the known details of these fires.
- The belt being constructed of organic material, it cannot be completely incombustible.
- and taking these two items together, to fix objectives to assure proper safety standards.

3.2. The belt will be considered as fire resistant if

3.2.1. In the case of a belt being stalled and the drum continuing to rotate, heating of the belt and the drum should not cause a fire.

3.2.2. Exposure of the belt to a small intense fire (caused for example by a conveyor roller, the brakes of the drive, rubbing of the belt, or fine coal) does not result in a spread of flame by the belt.

3.2.3. In the case of a major fire (burning for example oil in a stationary fire, or wood or coal in a propagating fire) the conveyor belt does not burn faster than the ignited material. Beyond the fire zone, the belt should not continue to burn.

4. Comparison of the current test requirements and procedures used in different countries of the Community

In France and Germany the only official test prescribed to date is that arising from ISO R 340. However in Germany, new tests have been developed on a full scale using samples of up to 50 m lengths, tested under most representative conditions. They are working to develop a new small scale gallery test.

In Belgium, Holland, and the United Kingdom, the friction test for making an assessment of the propensity of the belt to fire or glow is used, while the temperature of the drum is also measured.

The Belgians and the Dutch do in addition a full scale test in a gallery in the course of which a piece of belt is submitted to the flame of standardised burner.

In the United Kingdom, in addition to a drum friction test they do a test similar to ISO R 340 but in darkened enclosure with more stringent conditions.

5. Proposals for Tests and Criteria for fire resistance for Textile Carcas Conveyor Belts

5.1. Preliminary remarks

It is generally accepted that the form of the friction drum test proposed in this document is satisfactory. The propane burner test is generally accepted by members of the Community, with the notable exception of the United Kingdom, who use an alternative test over a burner in a darkened chamber. Additionally, the mining authorities in the United Kingdom demand a quality control test on a sample from each production batch.

5.1.1. Having taken note of the urgency of the problem, the work of the group of experts on "Fire Resistant Conveyors and other long articles", and the different tests used in the different countries, the Mines Safety and Health Commission proposes as an immediate interim measure, where the ISO R 340 Test is used to assess the flammability of conveyor belts; that it is replaced by a friction drum test and a propane burner flame test. Where tests other than the ISO R 340 test are acceptable to individual national mining authorities, the drum friction and propane burner flame test may be used as additions or alternatives to the national tests.

The inherent disadvantages of these methods are known. The tests which are proposed, in their present form are not applicable to metal carcas belts. The propane burner test needs a large gallery which is probably not easily available to either producers or users.

The effect of this proposition is not to hinder progress towards a laboratory scale test, for this is desirable. On the contrary, it is necessary that this work be speeded up with the aim of making simple accurate and reliable tests available to meet all requirements including check testing. The Mines Safety and Health Commission will follow these developments with interest.

The two tests have already proved their worth in some member countries. They are proposed with modifications derived from technical developments.

5.1.2. The Safety and Health Commission also takes note of other safety requirements for belt conveyors for use underground regarding medical and electrostatic aspects.

However, taking account of the urgent need to establish criteria of non-flammability, the Mines Safety and Health Commission felt that it was in-opportune at present to spend time on these aspects, but recommends that they should receive attention in due course. In the meantime, National Authorities will draw up requirements to deal with these aspects.

5.1.3. In view of the possibility of new materials, modifications to these test procedures may be required to take account of changes in belt technology.

5.2. Drum friction test

5.2.1. Arrangement of the sample

A sample of the belt, 150 mm wide and approximately 1 m long shall be passed through an arc of 180° around a horizontal steel drum 210 mm \pm 10 mm in diameter. The two lengths of belt near to the drum shall be horizontal. The upper length shall be fixed to a clamp at its extremity. The lower length shall pass over a guide pulley and descend vertically. A weight of 35 kg shall be attached to the extremity of the lower length. A diagram of a suitable arrangement for a drum friction test is given in Fig. 1 (see footnote 1).

5.2.2. Condition of the surface of the drum

Prior to each test the surface of the horizontal steel drum shall be cleaned with emery cloth so as to remove all traces of any rust or debris of conveyor belt produced by carrying out previous tests. In the clean

Footnote 1: Details of the lever system for applying tension to the sample of the drum are given in order to standardise the moment of inertia and thermal characteristics, respectively, of the test rig.

condition, the drum shall be bright as judged by eye and smooth to the touch. The temperature of the drum shall not exceed 30 °C prior to the beginning of any test.

5.2.3. Rotation of the drum and tension in the sample

The drum shall be rotated at 190 ± 15 revolutions per minute away from the upper, fixed length of belt until the belt is destroyed. During the test the tension in the belt shall be progressively increased by adding weights to the lower length of belt according to the weight/time schedule given in the following table. The drum driving motor should have a power of at least 7 kW.

Weight/time schedule for the increase of tension in conveyor belt submitted to the drum friction test.

Tension produced by weight attached kg	Duration of tension min
35	60
70	30
105	30
140	10
175	The test is continued at a tension of 175 kg until the belt ruptures

(see footnote 2)

5.2.4. Number of tests and the speed of air passing over the sample

Six tests in all shall be carried out. Three of these tests shall be made in
 (a) still air
 and three in

Footnote 2: It may be necessary, in the initial stages of a test, to reduce the tension in the sample by offsetting some of the weight attached to the free end in order to prevent the drum driving motor from stalling. Such reductions should be kept to the minimum possible and the full initial tension of 35 kg should be applied as evenly and as quickly as possible.

- (b) an air current having a velocity of 2 ± 0.1 m/s at a distance of 200 mm from the surface of the horizontal steel drum when the sample of belt is in position ready for a test (see footnote 3).

The air supplied to the apparatus shall be at normal ambient temperature, but tests shall not be made in air at a temperature of less than 5 °C.

The speed of the air current in the extractor system provided for the removal of fumes from the vicinity of the apparatus shall not exceed 0.5 m/s.

5.2.5. Conditions of acceptance

The sample shall pass the test provided that in none of the six tests described in 5.2.4., is there any sign of flame or glow on any part of the sample either during the test or after the rupture of the sample. The two pieces of the ruptured belt shall be left within the influence of the specified air current until either flaming or glowing occurs or it is clear that neither is possible (see Footnote 4).

In addition to the foregoing condition of acceptance, an assessment of the fire-producing capacity of the conveyor belt shall be obtained from measurements of the temperature of the driving drum achieved during the test. The temperature of the drum shall be measured by means of a thermocouple permanently attached to it (see below and Footnote 5).

Footnote 3: The standard air current can be produced by a blower fan or from a perforated pipe supplied with compressed air. In the latter case a 10 mm to 13 mm diameter pipe, perforated along one side with a row of holes (normally 0.75 mm to 1.5 mm diameter) should be fixed horizontally at the back of the drum (i.e. between the top and bottom portions of the belt) 0.6 m from the drum centre and in the same horizontal plane, with the row of holes facing the drum; approximately 20.7 kN/m² air pressure is required at the pipe). The actual air velocity must be measured by an anemometer and should be checked at regular intervals.

Footnote 4: Individual mining authorities may, even after the failure to pass the test as a result of glowing, accept the belt provided the duration and type of glowing occurring in the test has been reported, and provided also that they are satisfied with the subsidiary fire protection measures.

Footnote 5: Studies are being made of methods of recording the signal from a thermocouple permanently attached to a driving drum, for example by use of a capacitance-coupled, frequency-modulated instrument).

In certain countries it has been accepted for a number of years that the temperature of the driving drum achieved during a drum friction test is a valuable indication of the fire-producing capacity of a conveyor belt and an upper limiting temperature of 300 °C has been stipulated by a number of mining authorities. However it is now known that certain conveyor belts (for example polychloroprene based belts) may cause driving drum temperatures of up to 500 °C. Such belts are highly resistant to flame spread and may therefore be acceptable to mining authorities in the terms of 5.1.3. It is however accepted that individual mining authorities will set limits to driving drum temperatures appropriate to the types of conveyor belt that they are prepared to approve for use.

Fig. 1a

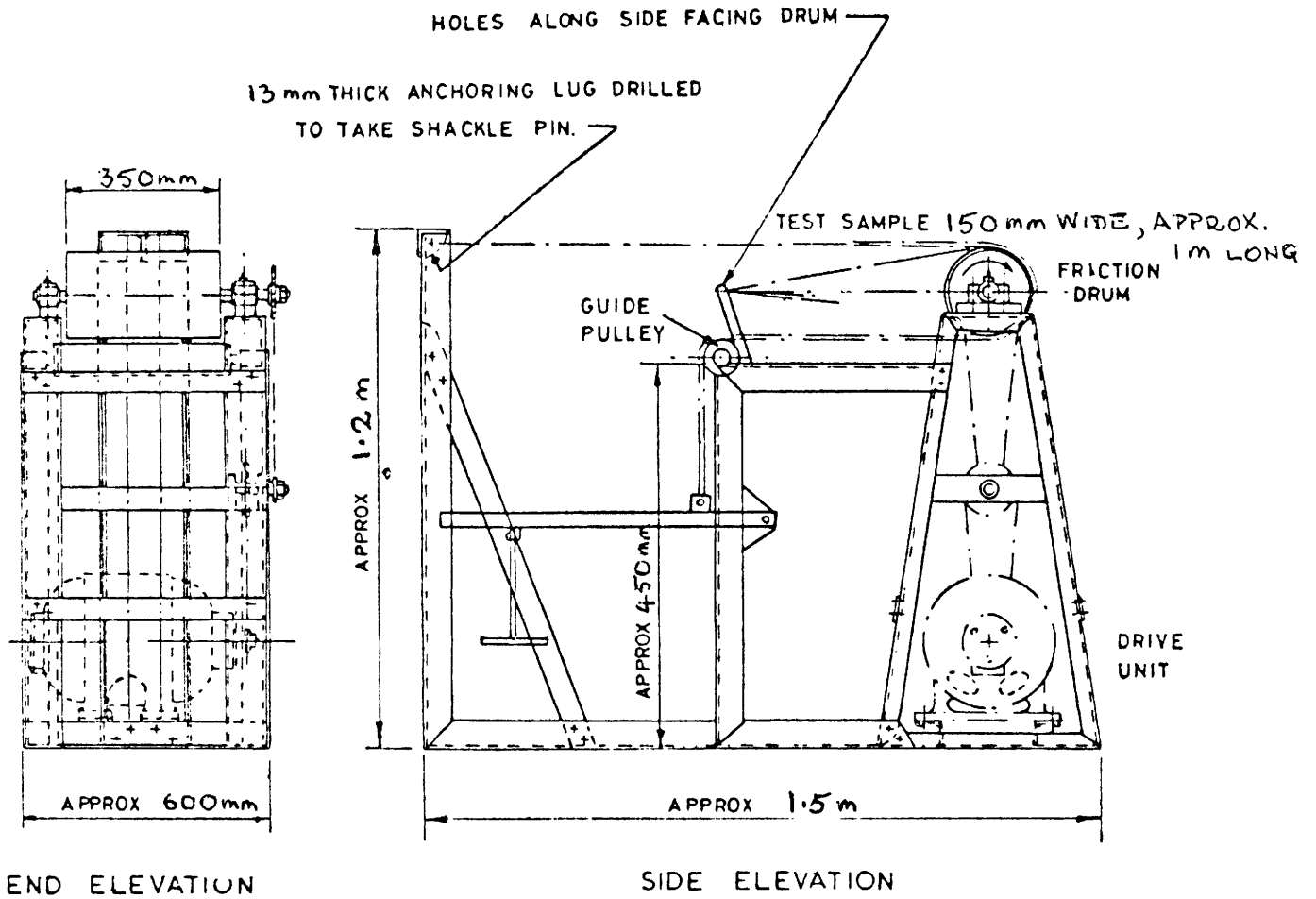


Fig. 1b

65-75mm DIA. ROLLER BUSHED AT ENDS AND RUNNING FREE ON 20mm DIA. M.S. SHAFTING.

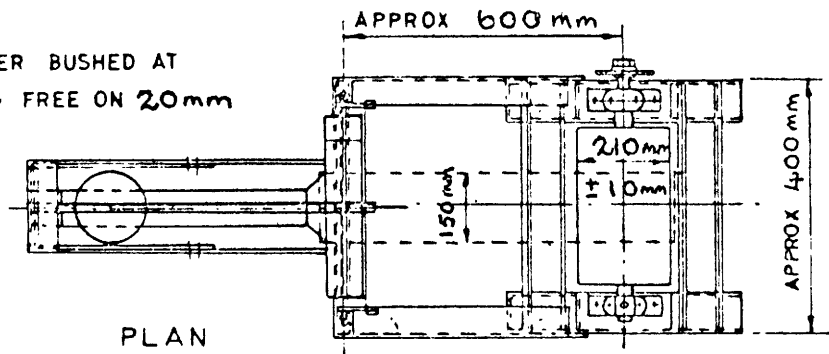
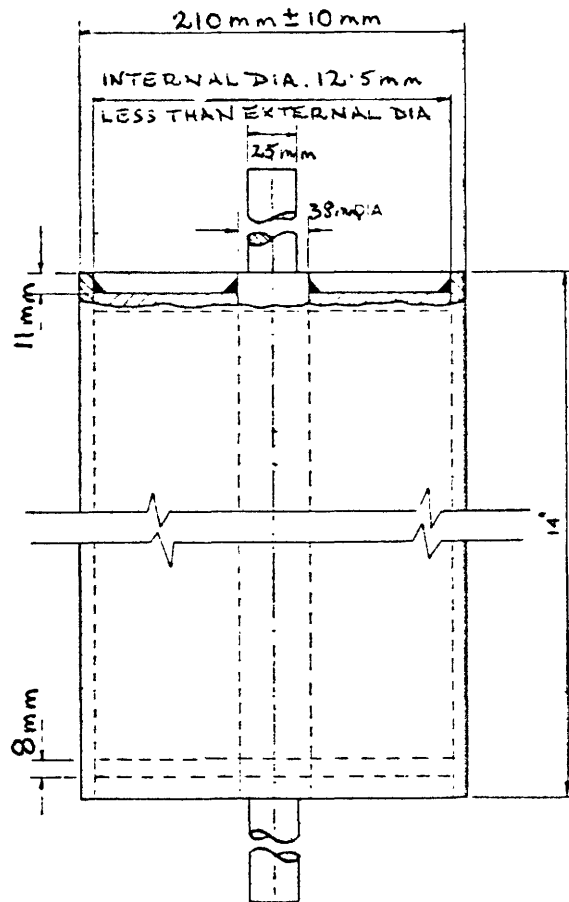
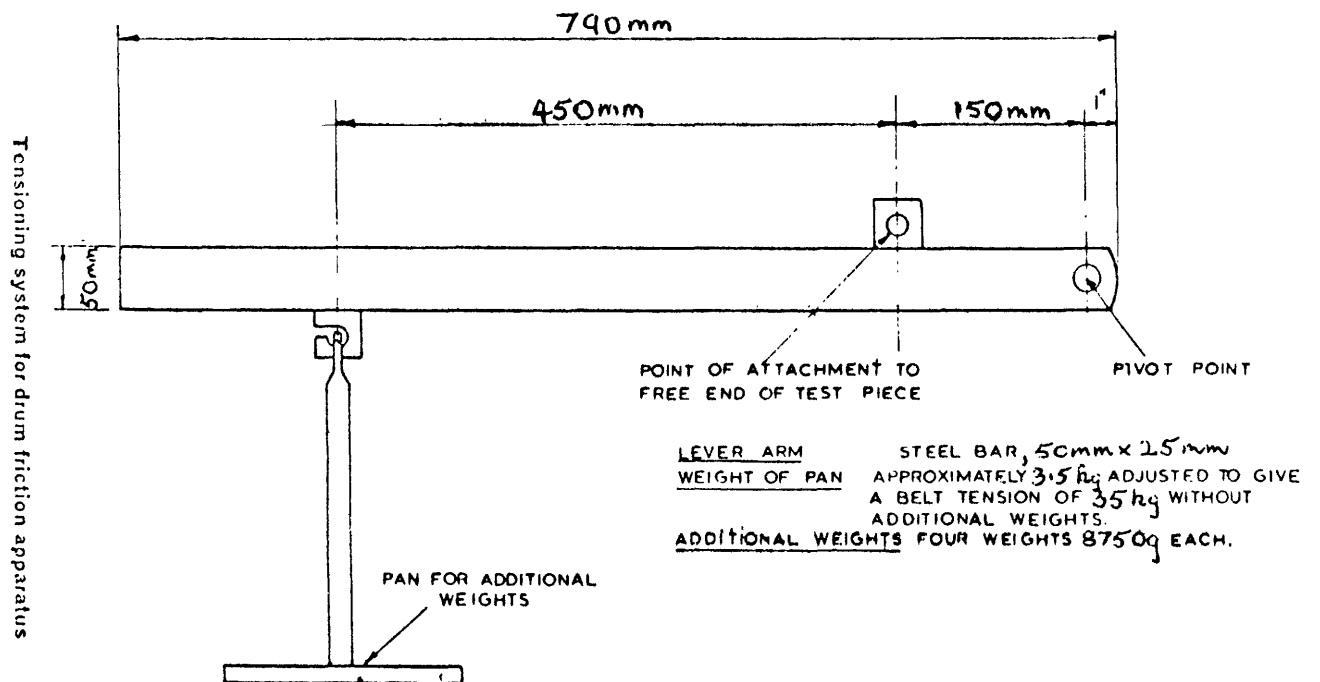


Fig. 1c



Drum for drum friction apparatus

Fig. 1d



5.3. Flame test5.3.1. Test arrangements

5.3.1.1. The test is to be carried out in an experimental roadway of $2 \times 2 \text{ m}^2$.

5.3.1.2. The sample, 2 m in length and of a normal operating width, is placed flat on a trestle 0.35 m above the surface. Additionally, if national authorities wish to test larger samples they may do so.

5.3.1.3. This trestle, installed in the direction of the roadway axis, consists of 15 metal bars 10 mm in diameter, spaced 150 mm apart.

5.3.1.4. A burner, consisting of a 450 mm square frame made of 20 to 25 mm diameter tube and having an overall height of 220 mm, is slid under the trestle. The tubes have 52 holes 1.5 mm in diameter drilled at 50 mm intervals (see Fig. 2). The sides are in line with the longitudinal axis of the sample.

5.3.1.5. The burner is fed with propane. This gas must consist of at least 90 % propane + propene. It passes through a pressure-relief valve, an 8 m long high-pressure hose of 6 mm inside diameter, and a diaphragm with a cylindrical hole of 1.5 mm diameter, and 1.7 mm long.

Before the test, the gas cylinder must be immersed to approximately $2/3$ of its height in a bath of water at a temperature of $25 \pm 3 \text{ }^\circ\text{C}$. The gas cylinder must not be emptied beyond 90 % of its weight when full.

The pressure in front of the diaphragm must be $3.00 \pm 0.02 \text{ kg/cm}^2$. It is to be taken with a highly sensitive precision manometer of precision class 0.6 calibrated from 0 to 6 kgf/cm^2 (the maximum error should not exceed 0.6 % of the highest value on the scale).

The flow of gas may be monitored with a flowmeter (Rotameter).

5.3.1.6. The test is to be carried out on two samples which will be brought up to a temperature of 19 to 25 $^\circ\text{C}$:

5.3.1.6.1. the first with its cover intact;

5.3.1.6.2. the second with the cover partly removed (see Fig. 3).

Two 50 mm wide strips of cover are removed longitudinally from the surface facing the burner, one at the edge, and the other with its inner edge 200 mm from the longitudinal axis of the belt.

A segment 110 mm long and with a width of not more than 10 mm 150 mm from the transversal edge overhanging the burner and in the axis of the sample.

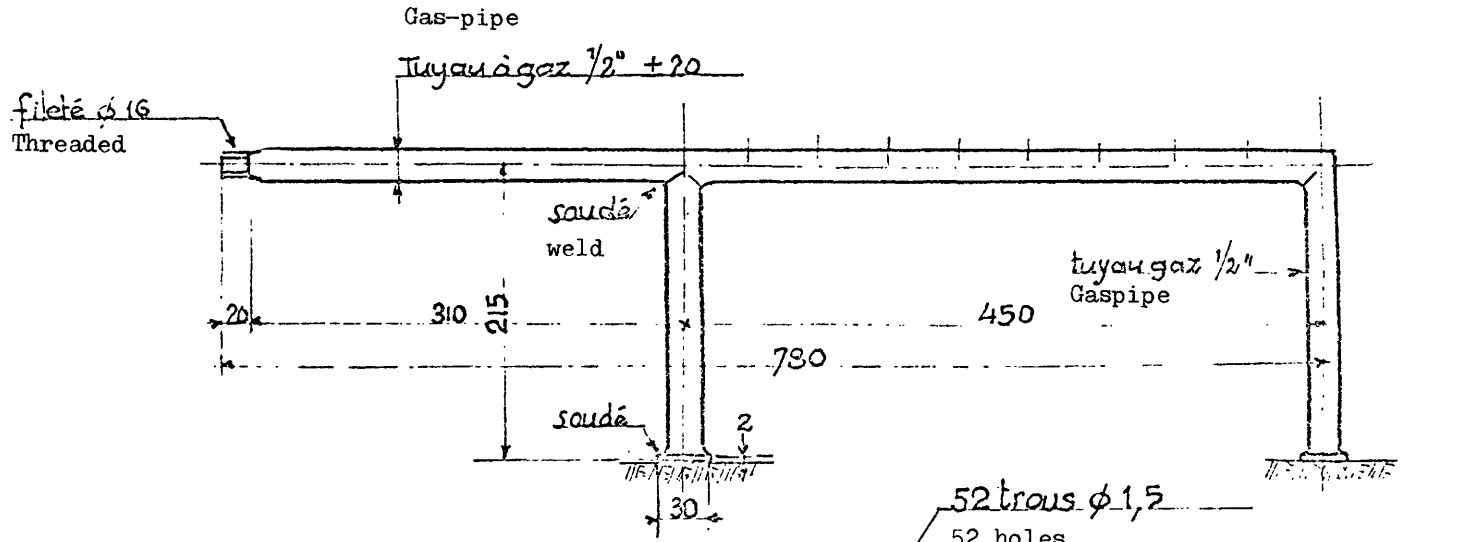
5.3.2. Test

5.3.2.1. The burner is lit and placed centrally on the longitudinal axis of the sample and 5 cm from the edge, where it is left for 10 minutes.

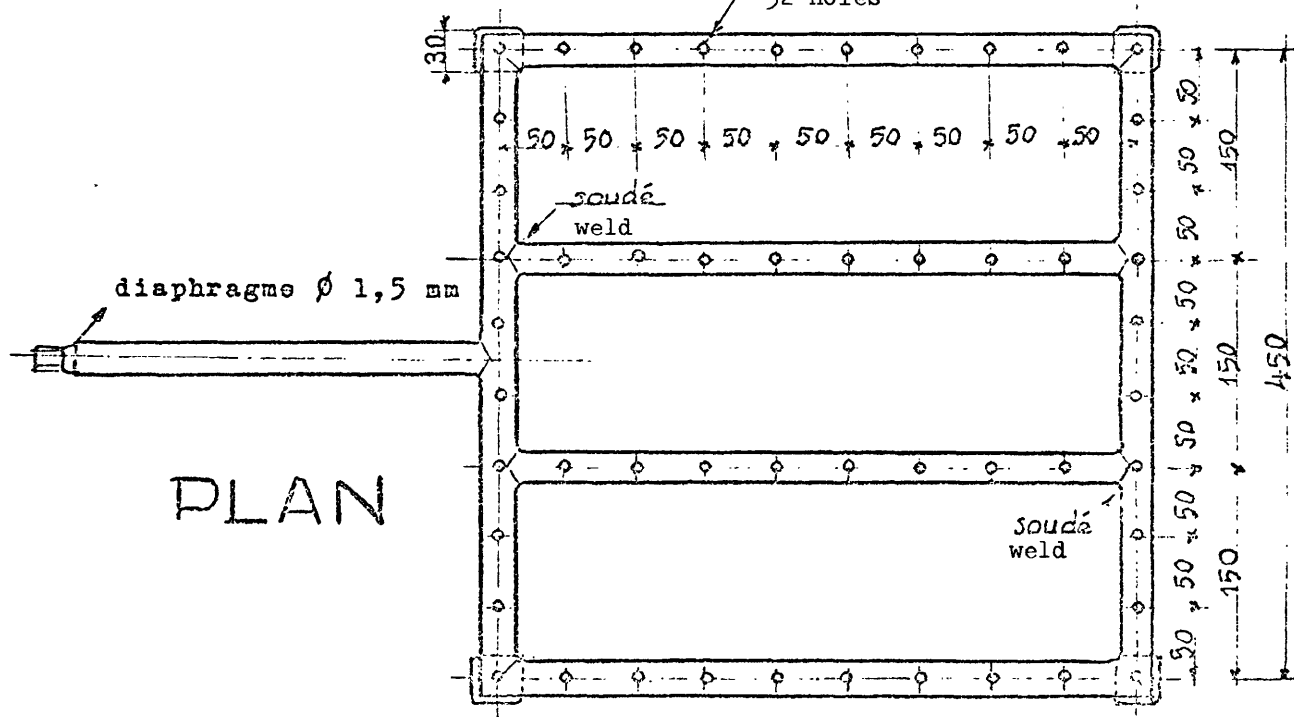
5.3.2.2. During and after the test an air current of 1.50 m/sec. is to be maintained until flames and incandescence disappear.

5.3.3. The belt is rejected, if, after turning off the burner and extinction of flames and incandescence, no part of the sample has remained intact over its whole width.

ELEVATION



Propane Burner



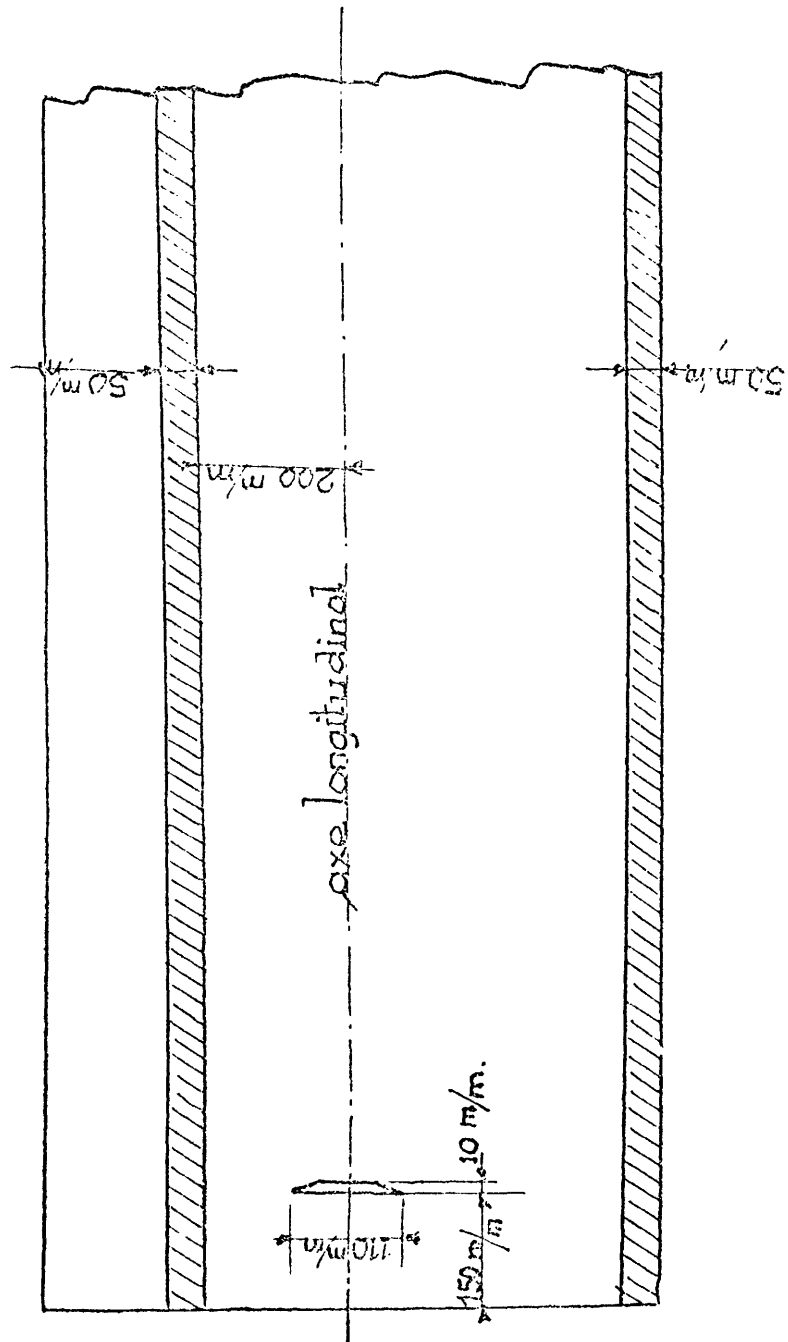
PLAN

Scale: 1/5
Dimensions in mm

FIG. 2

Fig. 3

Sample for Test No. 2



Coal Mine Fires in Workings with Belt Conveyors
European Community (EC) Period: 1.1.1960-31.12.1972

Annex 1

	Causes of fires	Belgium	Germany		France	United Kingdom ²⁾	Netherlands	EC members
			Northrh. Westph.	Saar ¹⁾				
2.1.	Fires resulting from operation of conveyor	3	109	22	56	244	38	472
2.1.1.	Fires affecting the belt	-	60	10*	48	71	5	194**
2.1.1.1.	through belt slip	-	40	10*	30	11	4	95**
2.1.1.2.	jamming of drums	-	3	-*	12	28	-	43**
2.1.1.3.	friction or abrasion (on installations, roof supports)	-	15	-*	-	5	-	20**
2.1.1.4.	other causes (e.g. brakes, hot bearings or the like)	-	2	-*	6	27	1	36**
2.1.2.	belt unaffected by fires	3	49	12*	8	173	33	278**
2.1.2.1.	through belt slip	-	-	-*	-	1	*	**
2.1.2.2.	jamming of idlers	3	15	2*	2	75	*	**
2.1.2.3.	friction, etc. (as for 2.1.1.3.)	-	21	4*	-	6	*	**
2.1.2.4.	other causes (as for 2.1.1.4.)	-	13	6*	6	91	*	**
2.2.	fires not caused by the conveyor (e.g. roof fires, fires resulting from electr. equipment)	*	*	*	5	514	*	**
2.2.1.	belt affected by fire	-	2	*	3	15	*	**
2.2.2.	belt not affected by fire	*	*	*	2	499	*	**

1) From the Annual Reports of the Oberbergamt of Saarbrücken 1960 - 1972

* No information available
** No information possible

2) It should be noted that for the United Kingdom there has been no case recorded of a conveyor belt complying with NCB Tests for fire resistance having propagated a fire beyond the source in the last 2 years.

Comparative Table
showing the requirements to be made of conveyor belts
and test procedures to establish these

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 - (a) Requirements
 - (b) Test procedures

3. to establish technological criteria
 - (a) Requirements
 - (b) Test procedures

D. Other measures (especially operational)

1. Inspectorate regulations
2. Other regulations or recommendations

Introduction

The following synoptic table has been prepared from document No. 3955/72, which summarised the replies concerning criteria and methods used to quality control and assess conveyor belts for use underground.

To permit an easy comparison of the essential items, an abridged form of the replies has been used. For the precise details, it would be necessary to consult the original documents which are given in Doc. 3955/72 by Mr. MARTH as listed below:

Belgium:	2883/72
France:	3042/72
Holland:	2887/72 and 2886/72
Germany:	2907/72, 2882/72 and 3039/72
United Kingdom:	3041/72 and 1745/72

A.1 TESTS FOR FLAMMABILITY AND FIRE CAUSES

	BELGIUM	GERMANY	FRANCE	GREAT BRITAIN	NETHERLANDS
- Test procedures 1. Friction test	<p>Test procedure half-scale</p> <p><u>Rotating Drum friction test No. 1</u> 2 test pieces are tested in stationary air and 2 in an airstream of 1.5m/sec on the drum. (Test pieces = 1000 x 150mm)</p> <p><u>Rotating drum test No.2</u> Additional to test No.1: 2 test pieces in an airstream of 1.5m/sec with additional blowing in of coal dust between test piece and drum.</p>	No rotating drum test, no slip test provided for.	No rotating drum test, no slip test provided for.	<p>The procedure is a sample test (NCB No. 158/1971)</p> <p><u>Drum friction test:</u> 1 sample is removed from the drum surface in still air, 1 sample in an air draught of 500 ft/min, (2.5m/s) at a distance of 8 inches (203mm) and tested. The test piece is 152 mm wide and 1.60m long. One belt end is clamped, one belt end is loaded with a 70lbs (32 kg) weight. If the belt has not been destroyed after 2 hours, the load is raised to 150 lbs (70 kg). (Further load increases of 80 lb (37 kg) follow at intervals of 10 min up to 390 lbs (180 kg). Test continues to destruction).</p>	<p>Test procedure on 1:1 scale.</p> <p><u>Slip test:</u> 1 sample is subjected to complete slip in an air draught of 0.5 - 0.7 m/sec, the drive drum being coated with a layer of sample being tested. (Full belt width tested)</p>
- Assessment	<p>Belt is rejected <u>in test No. 1</u> if during the test</p> <ul style="list-style-type: none"> - flames occur - coal glows beneath test apparatus - flames develop or spontaneously, when exposed to an airstream (1.5-5.0 m/sec) following tests, at glow points on belt cover or inlays. <p><u>in test No. 2</u>, if</p> <ul style="list-style-type: none"> - flames or glowing points arise at any point during or after the test on the test piece (when exposed to an airstream as in test No. 1), or - drum temperature exceeds 300°C 			<p>Belt is rejected when, in one of the two test conditions:</p> <ul style="list-style-type: none"> - flames or incandescence appear on the test-piece <p>or</p> <ul style="list-style-type: none"> - the drum temperature exceeds 300°C. 	<p>The belt is assessed as:</p> <ul style="list-style-type: none"> - poor, if it flares up or shows numerous glow points - moderate, if it shows few glow points - good, if it shows neither flame nor glow.

	BELGIUM	GERMANY	FRANCE	GREAT BRITAIN	NETHERLANDS
2. Flame impingement tests	<p>Test method on semi-technical scale:</p> <p>A 2 m long test piece is placed horizontally on a bargrid. Flame impingement is effected by a gas burner with 52 jets on a surface of 45 x 45 cm under the first 50 cm of test piece for 15 sec.</p>	<p>- DIN 22 103 for belts with textile plies - with reference to DIN 22 203 for belts with steel chord inlays</p> <p>6 <u>test pieces</u>, 200 x 25 mm, are cut lengthwise from belt, 3 with and 3 without covers (for steel chord belt 6 pieces with covers) <u>Flame impingement</u>: spirit or bunsen burner for 45 sec at a 45° angle to the vertically suspended test piece.</p>	<p>French standard AFNOR NF 4-108 corresponding to ISO standard R 340.</p> <p>12 <u>test pieces</u>, 200 x 25 mm, cut lengthwise and across from the belt, 3 lengthwise and 3 cross test pieces and the same number without covers.</p> <p><u>Flame impingement</u>: with spirit burner for 45 sec at a 45° angle to the vertically suspended test piece.</p>	<p>NCB No. 158/1971</p> <p>12 <u>test pieces</u>, 6 x 1 inches (152 x 25 mm) 6 with and 6 without covers.</p> <p><u>Flame impingement</u>: with spirit burner for 30 sec horizontal to test-piece in darkened room in still air.</p>	(see page 4)
- Assessment	<p>Belt is rejected if, after 15 sec impingement, flames and incandescence can still be seen on the covers once the burner has been withdrawn for more than 2 sec.</p>	<p>Belt is rejected, if</p> <ul style="list-style-type: none"> - overall duration of after-burn of 6 test pieces > 45 sec. - a single value exceeds 15 sec, or - subsequent blowing leads to flaring up. 	<p>Belt is rejected, when</p> <ul style="list-style-type: none"> - the overall duration of after-burn for each group of 6 test pieces > 45 sec. - a single value > 15 sec. <p>or</p> <ul style="list-style-type: none"> - blowing causes flaring up. <p>With belts with steel chord inlays the belt cover is removed for a 50 cm length and the burner held in this zone.</p> <ul style="list-style-type: none"> - After withdrawal of burner any after-burn should disappear, as soon as it reaches the belt cover. 	<p>Belt is rejected, when</p> <ul style="list-style-type: none"> - with the 6 test pieces with covers the avge. time to flame disappearance of visible flame or incandescence after withdrawal of burner > 3 sec. - with the test pieces without covers the <u>average after burn-time</u> > 5 sec. 	

A.11. FLAMMABILITY: UNDERLYING PRINCIPLES AND OBJECTIVES

<u>- Requirements and test procedures</u>	BELGIUM	GERMANY	FRANCE	GREAT BRITAIN	NETHERLANDS
1. Requirements	<p>The aim is to prevent a belt causing a mine fire. The rotating drum test indicates whether a belt fire and the heating of the drum represents a fire hazard for the immediate environment given certain friction conditions.</p>	<ul style="list-style-type: none"> - In the event of friction on the drive drum (partial or complete slip) the belt must not catch fire. The material rubbed off must not ignite the coal dust. - The belt must not burn with an open flame when exposed to incandescent coal dust and incandescence must not extend beyond the immediately affected area. 	<ul style="list-style-type: none"> - A belt heated due to friction caused by slip can burn slowly but must cease burning as soon as the cause of heating is removed. 	<ul style="list-style-type: none"> - The test-piece should neither flare up nor flow when rubbed against a drive drum. - Flame impingement on each of 6 test-pieces, with or without covers, using a clearly-defined flame should produce an after-burn not exceeding 3 or 5 sec. respectively. 	<ul style="list-style-type: none"> - Belts to be assessed as "good" in the above-mentioned slip test, and maximum temperature in slip test should not exceed 150°C. - Since 1965 some undertakings have been applying British requirements on flammability.
2. Test procedures	<p>- as described above.</p>	<p>None laid down. The Belgian test would be suitable. Also the British or Netherlands friction test. Neither, however, provide for the evaluation of the effect of rubbed-off materials on coal dust. (To meet the above mentioned 2nd requirement incandescent fire tests have been carried out at the Tremonia Test Mine in 1965/66).</p>	<p>No details.</p>	<p>As described above</p>	<p>As described above; in some cases according to British method.</p>

B.1. TESTING COMBUSTIBILITY
(semi or full scale)

	BELGIUM	GERMANY	FRANCE	GREAT BRITAIN	NETHERLANDS
- Test procedures	semi-technical scale:	None	None	None	On semi-technical scale:
- Flame impingement tests	A 2m long test piece of full belt width is placed horizontally on a bar grid. <u>Flame impingement:</u> is effected by a gas burner with 52 jets on a surface of 45 x 45 cm beneath the first 50 cm of the test piece for 15 sec., subsequently for 10 min.				A 2m long test-piece is placed horizontally on a bar grid. <u>Flame impingement:</u> is effected by a gas burner with 52 jets on a surface of 45 x 45 cm, beneath the first 50 cm of the test-piece for 10 sec., in an air draught of 0.5 m/sec.
- Assessment	Belt is rejected, if - flames can be seen on the belt covers after the first flame impingement of 15 sec., - no portion of the belt remains intact right across the belt after the second 10 min. flame impingement and after complete extinction of flames and incandescent points.				The belt is assessed as: - poor, if the after-burn time with flames exceeds 5 min. - moderate, if the after-burn time with flames is between 1-5 min. - good, if it continues to burn with flames for less than 1 min.

B.11. FLAMMABILITY : UNDERLYING PRINCIPLES AND OBJECTIVES

	BELGIUM	GERMANY	FRANCE	GREAT BRITAIN	NETHERLANDS
- Requirements and Test procedures					
1. Requirements	- The belt may burn within a firezone but not propagate the fire. Test criterium is for a belt exposed to a fire of certain intensity to burn for a length of up to approx. 1.5m.	- The belt must not propagate the fire, it may only burn within the area affected by the fire. A fire may be propagated on the belt up to 6m. The residual length of the belt (according to the model test in the fire test gallery at the Tremonia Test Mine) must be at least 50 cm. Test conditions in the gallery model test must be met by all belts. All belts which are to be used in timber supported roads underground must meet the test conditions of the small fire gallery.	- No details	- No details	- The belt must not propagate the fire. A fire ignited at a given point must not propagate itself on the belt beyond 1m after the initial fire is extinguished.
2. Test procedures	- Flame impingement test as described above.	- Fire-gallery model test at the Tremonia Test Mine: roadway cross-section 350 x 350mm, length 2.1m; 5 test pieces 1200mm long 60 mm wide; Flame impingement: by gas burner for 15 min. with air velocity of 0.5 ± 0.1 m/sec. Observation of flame spread, after-burn period and temperature measurements.	- No details	- No details	- Fire test with gas burner as above. In part, belts meeting British requirements are used, on which no flammability tests have been carried out.

	BELGIUM	GERMANY	FRANCE	GREAT BRITAIN	NETHERLANDS
		<ul style="list-style-type: none"> - Belt is rejected if one of the 5 test pieces burns up completely (no residual length) Residual length at least 50 cm (mean value of 3 of the 5 tests, after prior elimination of tests with smallest and largest residual length) - Test in "small fire gallery" of Tremonia Test Mine: gallery 25m long, 2.8m wide, 2.4 high; 15m long test piece suspended 0.7m below roof. <u>Fire impingement from three piles of air-dry pine sticks: 1,2m long and 3-5cm thick. Plus 70 kg round timber 6-10cm in \varnothing and 20 kg wood shavings and laths.</u> - Belt is rejected if burned-up belt length exceeds 6m. 			

	BELGIUM	GERMANY	FRANCE	GREAT BRITAIN	NETHERLANDS
- <u>Test procedures:</u> 1. Tests to establish properties affecting mine hygiene	None	None	None	None	- The CO-content of combustion gas is determined in the test roadway and tests made to establish whether other phenomena, e.g. irritations, occur during respiration.
- Assessment 2. Tests to establish electrical properties	None	None	None	None	No details None
3. Tests to establish technological properties	None	None	None	None	None

C. 11. UNDERLYING PRINCIPLES AND OBJECTIVES OF OTHER TESTS

	BELGIUM	GERMANY	FRANCE	GREAT BRITAIN	NETHERLANDS
- <u>Requirements and test procedures</u>					
1. To establish mine hygiene criteria					
a. Requirements	The HC1-, CO- and COC12 concentrations caused by a belt fire and measured on numerous PVC and synthetic rubber test-pieces were always below the concentrations neutralisable by self-rescuers.	Decomposition products arising from friction between belt and drive drum must be kept away from self-rescuers, even under the most unfavourable ventilation conditions. The effects of these decomposition substances must not be injurious to health. When friction occurs between belt and drive drum in unfavourable ventilation conditions sufficient oxygen must be available. The self-rescuers must not be impaired in their operation, (no inadmissible increase in breathing resistance).	None	None The limitation of after-burn time according to the above test procedure (A. 1.2) is regarded as a control over the belts capacity to produce toxic gases or vapours.	None The harmfulness of combustion gases and other decomposition substances of the belt is taken into account. Retention of toxic gases by self-rescuers is regarded as possible.
b. Test procedures	None	Proposal of Land Mines Inspectorate North-Rhine Westphalia: checking on laboratory scale at the Central Mines Rescue Station at Essen Kray, on scale 1: 1000, the following test under unfavourable ventilation conditions: roadway cross-section 4m ² , air velocity 0.5m/sec, complete slip on double drum drive with belt 1m wide.	None	None	None

	BELGIUM	GERMANY	FRANCE	GREAT BRITAIN	NETHERLANDS
<p>2. To establish electrical criteria:</p> <p>a. Requirements</p>	<p>Setting a surface resistance limit does not arise, because a programme of determining air humidity carried out for two years underground in the Belgian coal industry showed that the workings can be regarded as humid.</p>	<p>In the test, animals (guinea pigs) are exposed to a mixture of air, water vapour and low-temperature carbonization products. The latter are produced in an electrically heated LT carbonizer (upto 350°C) on a 20m² piece of belt. The mixture is passed to the test animals filtered through a self-rescuer. The injurious substances must be absorbed by the filter, the filter's breathing resistance must not become impenetrably high, animals exposed to unfiltered gas mixture should not suffer damage to eyes and skin.</p> <p>The surface resistance must be less than 3×10^8 ohms.</p>	<p>Surface resistance less than 3×10^8 ohms.</p>	<p>Surface resistance less than 3×10^8 ohms.</p>	<p>None.</p> <p>Since belts tested in GB have been used from 1965, a surface resistance of under 3×10^8 ohms can be assumed.</p>

	BELGIUM	GERMANY	FRANCE	GREAT BRITAIN	NETHERLANDS
b. Test procedures	Measurement of the surface resistance is based on Standard ISO/R 284 - 1962.	Ring electrode measurement according to DIN 22104 (corresponds to ISO/R 284 - 1962)	AF NOR NF T 47-109 corresponding to ISO/R 284.	Resistance measured with ring electrode on surface 30 x 30 cm of test piece. NCB-Specification No. 15/1971, section 4, doc. 1745/72.	None (But see NCB-Specification No. 15/1971 in connection with possible use of GB tested belt)
3. To establish technological criteria:					
a. Requirements and					
b. Test procedures	Flexibility of each belt is measured, but without laying down a threshold value.	For belts with textile inlays, according to DIN 22 102, 22 108, 22 109 and 22 110 - For belts with steel chord inlays according to DIN 22 131, Sheets 1-4.	The belts must meet the requirements of the Load Schedules of Charbonnages de France. (Standards NFM 81-651 and NFM 81-653). - For belts with steel chord inlays two standards are in preparation (drafts M 81-652 and M 81-654).	NCB-Specification No. 158/71 (Doc.1745/72)	No details - See previous comment re use of GB tested belts.

D. OTHER MEASURES (especially operational)

	BELGIUM	GERMANY	FRANCE	GREAT BRITAIN	NETHERLANDS
1. Inspectorate regulations	Ministerial Directive of 11.9.61. on belt conveyors in underground workings of the coal industry (see doc. 2883/72)	<ul style="list-style-type: none"> - Installation and operating instructions for continuous conveyors and for belt conveyors : Bergverordnung (paras. 95, 96, 259) of 20.2.1970. - Guidelines and recommendations for the installation and operation of belt conveyors: Fire-protection regulations of 15.3.1963. - Circulars from Land Mines Inspectorate North-Rhine Westphalia of 9.7.71, 28.12.71. and 22.6.72, 30.8.72: laying down extensive fire precautions for conveyors fitted with belts (textile and steel chord inlays). 	Various circulars and instructions of Ministry for Industrial and Scientific Development (currently being revised).	Not available to the Secretariat.	Do not exist.
2. Other regulations or recommendations	None listed	<ul style="list-style-type: none"> - Recommendations of Ruhrkohle AG No. 1/72 on measures to prevent and combat fires in roadways with belt conveyor installations. - Recommendations of Saarbergwerke AG - Central Mine Rescue Station of 8.9.72. on the behaviour of conveyor belts on fires; secondary fire prevention measures for belt conveyor installations (see doc. 3039/72) 	Slip control, braking for downhill-running belt, automatic extinguishers, heat sensors in certain instances.	Use of belt slip appliances (belt watchers), automatic extinguishers at certain high-fire-risk points (not expressly prescribed). Unmanned stage-loading points regarded as high fire-risk points. Guidance on operation of these points contained in "Specification on control and monitoring systems for belts with unmanned stage-loading points".	Do not exist.

SOME EXAMPLES OF GOOD PRACTICE FOR THE INSTALLATION
AND USE OF WATER SPRAYS ON PLOUGH FACES

(Annex to "Guide lines concerning the design and use of coal getting
and heading machines relating to the reduction of airborne dust" -
included as annex XI in 11th annual report)

(adopted by the Mines Safety and Health Commission on 15 November 1974)

Some examples of good practice for the installation
and use of water sprays on plough faces

INTRODUCTION.

1. The Mines Safety and Health Commission adopted on the 3rd. May 1974, the document 1530/4/71; guide lines concerning the design and use of coal getting and heading machines relating to the reduction of airborne dust. This document was annexed to the 11th. Annual Report of the Mines Safety and Health Commission.

The present text which supplements doc. 1530/4/71 describes good practices which have proved their worth in the Federal Republic of Germany and the United Kingdom. They are put forward as suggestions, not recommendations, for consideration in the design stage of ploughed faces, when local conditions, and in particular the characteristics of the seam, may result in infusion being impracticable or failing to provide adequate dust suppression.

A. SPRAYING PLOUGH RUNS.

2. Some 55 % of the ploughed faces in the Federal Republic of Germany are provided with sprays to wet the dust and coal on the face, before and during its transfer to and on the conveyor and to help the agglomeration of particles already airborne.
3. Two methods are used :
 - 3.1. Full face spraying when all the sprays along the face operate simultaneously;

- 3.2. Part face spraying is where only the zone close to the plough is sprayed. In this case groups of sprays are switched on and switched off by the passage of the plough.
- 4.1. Full face spraying requires a relatively small capital outlay and maintenance. Control is either by hand-operated valves or by an electrically controlled valve, which operates with the starting of the plough on conveyor.
- 4.2. In the case of part face spraying, the cost is higher; the supply to each group of sprays may be manually controlled by the plough attendants, or automatically controlled by electrically operated valves built into the conveyor and actuated by strong permanent magnets, fixed to the plough.
- 4.3. In order to avoid blockages and increased maintenance costs it is advisable to ensure a supply of clean water to the jets by fitting adequate filters, whose efficiency can easily be tested by measuring the resistance to the water flow. Two manometers - in front of and behind the filter - can be used to measure input and output pressures. Changes in these pressures as compared with those with a clean filter indicate the amount of dirt present in the filter.

5. Choice of Method.

The method is chosen to suit local conditions. Full face spraying is adopted when the coal continues to break off from a face already ploughed; part face spraying when the make of dust is mainly due to the operation of the plough. The extent to which faces are sprayed in front of and behind the plough is also varied according to local conditions including the condition of the floor. The length of the face over which the sprays are in operation as a result of the movement of the plough, is dependant on local conditions, particularly the strength of the floor.

6. Choice of type, size and spacing of jets.

The choice of type and size of jet is determined by working condition and depends among other things on the thickness of the seam, the tonnage to be won, the speed of the air supply and the type of control chosen for the spraying machines. Hollow cone, full cone and flat stream jets are fitted to suit conditions. Hollow cone and full cone jets are used to wet spoil on the conveyor and the dust at the working face. Hollow cone jets, which produce a watermist of very fine droplets, are however only suitable when the speed of the ventilation over the conveyor is relatively low. When the speed is higher the very fine droplets are carried some distance in the airstream. With very high air speeds it is often advisable to change to flat stream jets which project a narrow fan of water in relatively large droplets. Dust carried in the air supply can only be counteracted by water droplets sprayed into the air supply in sufficient size and number and with sufficient force. When the flat stream jets are being fitted it is of course important that the jets should be directed at right angles to the face.

7. The jets can be fitted in or on the conveyor spill plates.

Incorporation of the jets in the spill plate often gives protection against mechanical damage, but their effectiveness can be impaired by the spoil on the loaded conveyor. When the jets are fitted on the spill plate a nozzle holder is used to protect them from mechanical damage and permit their proper alignment.

8.1. In the case of full face spraying the interval between the jets is from 9 to 15 m. to suit with local conditions. The valves are installed in the gates, close to the electrical switchgear .

8.2. In automatic part face spraying the jets are 4,5 - 6 m. apart in group of (say) 4 units. The control valves of each group are placed at 18 to 24 m. intervals and are fixed to the plough chain guards or attached to the spill plates.

8.3. In all cases the supply pipes are chosen to suit with the pressure available and the desired volume to be passed. For example, in the case of part face spraying 8 - 12 sprays operate at the same time (i.e. 2 or 3 groups of 4) with a total consumption of 80 to 120 litres per minute. With a supply pressure of 20 bars at each end of the face at least 25 mm. flexible pipes will be required for the main supply and at least 20 mm. hoses for the supply to each group, with 13 mm. hoses to each individual jet.

9. Spraying times.

9.1. In full face spraying the duration of spraying is governed by the running time of either the plough or the conveyor. It is usually desirable and particularly in steep workings to provide jets with back-pressure valves to prevent the pipe along the face from leaking when the machinery is standing.

9.2. In automatic part face spraying at least one group of jets both in front of and behind the plough are in operation while the plough is moving. The operating time of the magnetic valves is related to the speed of the plough.

SPRAYING FROM THE PLOUGH ITSELF.

10. Ploughs are not widely used in Great Britain because of the hardness of the coal. Where ploughs can be used water infusion is difficult and trouble has been experienced with excess water on soft floors and with maintenance generally when using full or part face spraying. In these circumstances the National Coal Board has found the most effective method is to apply water directly on the body of the plough.

11. The system is much the same as with other types of power loader. The water hose - double wire braided high pressure hose with a minimum diameter of 25 mm. - is laid through the face and connected directly to the plough. Suitably mounted jets or flat fan sprays then direct the water to the points of the various blades at 205 litres per minute while the plough is moving.
12. The main difficulty is to maintain and prevent damage to the trailing hose. A fully automatic method has been developed in South Wales with the following main features :
 - 12.1. In the case of a Gleithobel plough a hose laying arm attached to the stabilising portal ensures that the hose is laid correctly in hose troughs which are integral with the conveyor spill plate and powered support attachments. The arm also negotiates the loops formed in the hose when there is a change in the cutting direction of the plough. It is claimed that up to seven loops can be dealt with.
 - 12.2. Hose restrainers of semi-circular form made from lengths of 13 mm. diameter double braided hose are used to keep the hose within the hose carrying troughs. The loops are sufficiently resilient to permit the passage of the hose laying arm but firm enough to prevent loops in the main hose escaping from the trough.
13. As with all spray systems an adequate supply of clean water is essential to prevent blockages and reduce maintenance. Suitable filters are therefore fitted where necessary.

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ANNEX VIII

DECISION OF THE MINES SAFETY AND HEALTH COMMISSION
REQUESTED BY CENELEC AS REGARDS THE DESIGN SPECIFICATIONS TO BE
SHOWN IN THE GENERAL REQUIREMENTS FOR ELECTRICAL APPARATUS FOR
USE IN GASSY MINES

(adopted by the Mines Safety and Health Commission on 15.11.1974)

Unanimous decisions of the Mines Safety and Health Commission
taken in the course of the meeting of 15th November 1974

Question 1

What is the maximum surface temperature to be shown in the general CENELEC requirements for group I (equipment for use in mines susceptible to firedamp) ?

Answer

- a) For surfaces on which there is no risk of coal dust depositing, (e.g. rotating parts) a maximum surface temperature of 450° C is admitted. These ~~are~~ surfaces located inside electrical equipment and are therefore not external surfaces.
- b) For surfaces on which coal dust may be deposited the corresponding temperature is 150° C.

Sub-committee 31.1's proposal for definition of the surface temperature: "The surface temperature is the highest temperature reached during operation under the most unfavourable conditions, by any part or any portion of the surface of an item of equipment which is liable to cause ignition when in contact with potentially explosive atmospheres (the most unfavourable conditions include recognised types of overloading and all recognised fault conditions)". It does not take into account the danger of coal dust ignition and must be adapted to mining conditions in this respect.

Question 2

What is the decision of the Mines Safety and Health Commission in relation to the use of light alloy enclosures for Group 1 (mines susceptible to firedamp) ?

Answer

This question involves many other aspects from the materials used.

The Mines Safety and Health Commission will examine the question in a more general context.

Question 3

Can the Mines Safety and Health Commission confirm or deny that the use of contacts under oil is prohibited for switching and isolating devices in Group I (mines susceptible to firedamp)?

Answer

The Mines Safety and Health Commission draws your attention to its earlier decisions, the last of which is dated 6 February 1973.

It therefore confirms that:

- contacts under oil are prohibited in devices for direct current (Group I);
- contacts under oil are prohibited at a voltage of 1 100 volts or less (Group I);
- contacts under oil are allowed at a voltage greater than 1 100 volts, provided that the amount of oil does not exceed 5 litres per pole (Group I).

Question 4

Should provision be made for locking by padlock in a second edition of the CENELEC European Standard?

Answer

The Mines Safety and Health Commission approves of the provision of locking by padlock in apparatus for cutting off the source of energy in electrical equipment for mines susceptible to firedamp (Group I).

SETTING UP OF AN ADVISORY COMMITTEE ON SAFETY,
HYGIENE AND HEALTH PROTECTION AT WORK
(74/325/CEE - Journal Officiel of 9.7.1974)

EXTENSION OF THE RESPONSIBILITIES OF THE
MINES SAFETY AND HEALTH COMMISSION TO ALL MINERAL-EXTRACTING INDUSTRIES
(74/326/EEC - Official Journal of 9.7.1974)

COUNCIL

COUNCIL DECISION

of 27 June 1974

on the setting up of an Advisory Committee on Safety, Hygiene and Health Protection at Work

(74/325/EEC)

THE COUNCIL OF THE EUROPEAN COMMUNITIES,

Having regard to the Treaty establishing the European Economic Community, and in particular Article 145 thereof;

Having regard to the draft of the Commission;

Having regard to the Opinion of the European Parliament⁽¹⁾;

Having regard to the Opinion of the Economic and Social Committee;

Whereas the profound transformation in production methods in all sectors of the economy and the spread of dangerous techniques and materials have created new problems for the safety, hygiene and health protection of workers at their place of work;

Whereas the prevention of occupational accidents and diseases, as well as occupational hygiene, are among the objectives of the Treaty establishing the European Economic Community;

Whereas the Council resolution of 21 January 1974⁽²⁾ concerning a social action programme envisages an action programme for workers which aims *inter alia* at improvement in safety and health conditions at work;

Whereas a standing body should be envisaged to assist the Commission in the preparation and implementa-

tion of activities in the fields of safety, hygiene and health protection at work and to facilitate cooperation between national administrations, trades unions and employers' organizations;

Whereas this Decision does not conflict with Article 118 of the Treaty establishing the European Economic Community,

HAS DECIDED AS FOLLOWS:

Article 1

An Advisory Committee on Safety, Hygiene and Health Protection at Work (hereinafter called the 'Committee') is hereby established.

Article 2

1. The Committee shall have the task of assisting the Commission in the preparation and implementation of activities in the fields of safety, hygiene and health protection at work.

This task shall cover all sectors of the economy except the mineral extracting industries falling within the responsibility of the Mines Safety and Health Commission and except the protection of the health of workers against the dangers arising from ionizing radiations which is subject to special regulations pursuant to the Treaty establishing the European Atomic Energy Community.

⁽¹⁾ OJ No C 40, 8. 4. 1974, p. 64.

⁽²⁾ OJ No C 13, 12. 2. 1974, p. 1.

2. The Committee shall have the task in particular, of undertaking the following activities :

- (a) conducting, on the basis of information available to it, exchanges of views and experience regarding existing or planned regulations ;
- (b) contributing towards the development of a common approach to problems existing in the fields of safety, hygiene and health protection at work and towards the choice of Community priorities as well as measures necessary for implementing them ;
- (c) drawing the Commission's attention to areas in which there is an apparent need for the acquisition of new knowledge and for the implementation of appropriate educational and research projects ;
- (d) defining, within the framework of Community action programmes, and in cooperation with the Mines Safety and Health Commission :
 - the criteria and aims of the campaign against the risk of accidents at work and health hazards within the undertaking ;
 - methods enabling undertakings and their employees to evaluate and to improve the level of protection ;
- (e) contributing towards keeping national administrations, trades unions and employers' organizations informed of Community measures in order to facilitate their cooperation and to encourage initiatives promoted by them aiming at exchanges of experience and at laying down codes of practice.

Article 3

1. The Committee shall produce an annual report on its activities.
2. The Commission shall forward that report to the European Parliament, the Council, the Economic and Social Committee and the Consultative Committee of the European Coal and Steel Community.

Article 4

1. The Committee shall consist of 54 full members, there being for each Member State two representatives of the Government, two representatives of trade unions and two representatives of employers' organizations.
2. An alternate member shall be appointed for each full member.

Without prejudice to Article 6 (3), the alternative member shall attend Committee meetings only when the member for whom he deputizes is unable to be present.

3. Full members and alternate members of the Committee shall be appointed by the Council which, in respect of representatives of trade unions and employers' associations, shall endeavour to achieve a fair balance in the composition of the Committee between the various economic sectors concerned.

4. The list of the members and the alternate members shall be published by the Council in the *Official Journal of the European Communities* for information purposes.

Article 5

1. The term of office of full members and alternate members shall be three years. Their appointments shall be renewable.
2. On expiry of their term of office, the full members and alternate members shall remain in office until they are replaced or their appointments are renewed.
3. A member's term of office shall end before the expiry of the three year period with his resignation or following a communication from the Member State concerned indicating that the term of office is terminated.

For the remainder of the term of office, a member shall be replaced in accordance with the procedure laid down in Article 4.

Article 6

1. The Committee shall be chaired by a member of the Commission or, where such member is prevented from so doing and as an exception, by a Commission official to be nominated by him. The Chairman shall not vote.
2. The Committee shall meet when convened by the Chairman, either at the latter's initiative or at the request of at least one-third of its members.
3. The Chairman may, on his own initiative, invite up to two experts to participate in Committee meetings.

Each Committee member may be accompanied by an expert, provided that he so informs the Chairman at least three days before the Committee meeting.

4. The Committee may establish working parties under the chairmanship of a Committee member.

They shall submit the results of their proceedings in the form of a report at a meeting of the Committee.

5. Representatives of the Commission's department concerned shall participate in meetings of the Committee and of working parties.

Secretarial services shall be provided for the Committee and for working parties by the Commission.

Article 7

1. An opinion delivered by the Committee shall not be valid unless two-thirds of its members are present.

2. Opinions of the Committee shall state the reasons on which they are based; they shall be delivered by an absolute majority of the votes validly cast. They shall be accompanied by a written statement of the views expressed by the minority, when the latter so requests.

Article 8

The Committee shall adopt its rules of procedure which shall enter into force after the Council, having received an opinion from the Commission, has given its approval.

Article 9

Without prejudice to Article 214 of the Treaty, Committee members shall be required not to disclose

information to which they have gained access through Committee or working party proceedings, if the Commission informs them that the opinion requested or the question raised is of a confidential nature.

In such cases, only Committee members and representatives of the Commission's department shall attend the meetings concerned.

Article 10

This Decision shall enter into force on the fifth day following its publication in the *Official Journal of the European Communities*.

Done at Luxembourg, 27 June 1974.

For the Council

The President

K. GSCHIEDLE

COUNCIL DECISION

of 27 June 1974

on the extension of the responsibilities of the Mines Safety and Health Commission to all mineral-extracting industries

(74/326/EEC)

THE COUNCIL OF THE EUROPEAN COMMUNITIES,

Having regard to the Treaty establishing the European Economic Community, and in particular Article 145 thereof ;

Having regard to the draft of the Commission ;

Having regard to the Opinion of the European Parliament⁽¹⁾ ;

Having regard to the Opinion of the Economic and Social Committee ;

Whereas the representatives of the Governments of the Member States meeting within the special Council of Ministers, by Decision of 9 and 10 May 1957, set up a Mines Safety and Health Commission whose terms of reference as laid down by Decision of 9 July 1957⁽²⁾ of the representatives of the Governments of the Member States meeting within the Special Council of Ministers, amended by Decision of 11 March 1965⁽³⁾ are to follow developments in safety and in the prevention of occupational risks to health in coal mines and to draw up proposals appropriate for the improvement of safety and health in coal mines ;

Whereas this body has proved to be an effective and suitable instrument for safeguarding the health and safety of workers in coal mines ;

Whereas problems of safety similar to those in coal mines also exist in other mineral-extracting industries ;

Whereas the prevention of occupational accidents and diseases, as well as occupational hygiene, are among the objectives of the Treaty establishing the European Economic Community ;

Whereas the Council resolution of 21 January 1974⁽⁴⁾ concerning a social action programme envisages an action programme for workers which aims *inter alia* at improvement in safety and health conditions at work ;

Whereas the Safety and Health Commission should be assigned the task of extending to all mineral-extracting industries the preventive action which has hitherto been confined to coal mines ;

Whereas the representatives of the Governments of the Member States meeting within the Council agreed to assign this task to the Safety and Health Commission,

HAS DECIDED AS FOLLOWS :

Article 1

1. Preventive action against risks of accident and occupational risks to the safety and health of workers in all mineral-extracting industries except simple excavation, excluding the protection of the health of workers against the dangers arising from ionizing radiations which is subject to special regulations pursuant to the Treaty establishing the European Atomic Energy Community shall be the responsibility of the Mines Safety and Health Commission within the terms of reference laid down by Decision of 11 March 1965 of the representatives of the Governments of the Member States meeting within the special Council of Ministers.

2. Mineral-extracting industries shall be taken to mean the activities of prospecting and of extraction in the strict sense of the word as well as of preparation of extracted materials for sale (crushing, screening, washing), but not the processing of such extracted materials.

3. Simple excavation shall be taken to mean work whose purpose is not the extraction of materials for use.

⁽¹⁾ OJ No C 40, 8. 4. 1974, p. 64.

⁽²⁾ OJ No 28, 31. 8. 1957, p. 487/57.

⁽³⁾ OJ No 46, 22. 3. 1965, p. 698/65.

⁽⁴⁾ OJ No C 13, 12. 2. 1974, p. 1.

Article 2

1. This Decision shall enter into force on the fifth day following its publication in the *Official Journal of the European Communities*.

2. It shall apply :

— to the underground activities of the mineral-extracting industries : as from the day laid down in paragraph 1 ;

— to the other activities of the mineral-extracting industries : as from 1 January 1976.

Done at Luxembourg, 27 June 1974.

For the Council

The President

K. GSCHEIDLE

BIBLIOGRAPHY OF THE WORK OF THE MINES SAFETY AND
HEALTH COMMISSION

I - TECHNICAL PROBLEMS

A - Mine rescue

1. Organization of mine rescue arrangements

- Report on tour of central rescue stations in the Community countries and Great Britain (First Report on the organization of mine rescue services 1958/59) (2nd Report of the Mines Safety and Health Commission, Annex B, June 1961);
- Second Report on the organization of mine rescue services 1960 (3rd Report of the MSHC, Annex V a, November 1966);
- Third Report on the organization of mine rescue services 1961 (3rd Report of the MSHC, Annex VI a, November 1966);
- Fourth Report on the organization of mine rescue services 1962 (3rd Report of the MSHC, Annex VII a, November 1966);
- Fifth Report on the organization of mine rescue services 1963 and 1964 (3rd Report of the MSHC, Annex VIII a, November 1966);
- Sixth Report on the organization of mine rescue services, 1965/66 (5th Report of the MSHC, Annex V, October 1968);
- Seventh Report on the organization of mine rescue services, 1967/68, (7th Report of the MSHC, Annex IV, September 1970);
- Recommendations regarding the provision of advice from foreign experts in the case of major accidents (3rd Report of the MSHC, Annex III, November 1966);
- Communication links between the rescue base and the rescue team (3rd Report of the MSHC, Annex IV, November 1966);
- List of regulations and directives concerning the organization of mine rescue services in the countries of the Community and the United Kingdom (Doc. 3845/1/70; to be published in the 9th Report of the MSHC).

2. Rescue equipment

- Interim report on the continued development of the CO-filter self-rescuer (Doc. 1872/68/1, 10th October 1968);
- Results of the research carried out with financial assistance from the Commission of the European Communities into the improvement of the physiological conditions for the wearing of breathing apparatus (8th Report of the MSHC, Annex IV, June 1971).

3. Research work at high temperatures

- Final report on research into the establishment of simple criteria for the selection of rescue team personnel for heavy work in high temperatures (3rd Report of the MSHC, Annex IXa, November 1966).

4. Rescue with borehole

- List of specialists for borehole rescue work and equipment available in Community countries (8th Report of the MSHC, Annex III, June 1971)

B - Fires and underground combustion

1. Shaft fires at great depth

- Recommendations on the equipment having regard to the prevention of open fires (1st Report of the MSHC, April 1959);
- Fighting of fires in shafts by bringing in water (2nd Report of the MSHC, page 24, June 1961);
- Final report on experiments with shaft fires carried out by the Experimental Roadway Association in Dortmund, with the financial aid of the High Authority, at Dorstfeld Colliery, Dortmund (3rd Report of the MSHC, Annex III a, November 1966);
- Explanatory notes and views of the Working Parties on Underground Combustion and Fires and Mine Rescue Organization, and their expert sub-committees, concerning the final report of the Experimental Roadway Association, Dortmund, on the shaft fire experiment at Dorstfeld Colliery (3rd Report of the MSHC, Annex III b, November 1966).

2. Ventilation

- Study of the Group of Experts on Ventilation: Stabilization of Ventilation in Pit Fires - investigation in the light of Prof. Budryk's theory (this study consists of two separate parts: the Report itself and Annex III to the 6th Report of the MSHC, September 1966);
- Practical conclusions of the application of the theory of stabilisation of ventilation (6th Report of the MSHC, Annex III, September 1969).

3. Fire stoppings (dams)

- Sealing-off of mine fires and underground combustion by dams (2nd Report of the MSHC, page 51, June 1961);
- Report on trials with explosion-proof dams carried out by the Experimental Roadway Association in Dortmund at the request of the Safety Commission and with financial aid of the High Authority - Statement of policy regarding the erection of advance dams of plaster as a fire fighting measure (3rd Report of the MSHC, Annex I, November 1966);
- Final Report on trials with explosion-proof dams, carried out by the Experimental Roadway Association in Dortmund with the financial aid of the High Authority (3rd Report of the MSHC, Annex I a, November 1966);
- Instructions for the construction of plaster stoppings by the method developed by the Essen-Kray Main Rescue Station (3rd Report of the MSHC, Annex X a, November 1966);
- Instructions for the hydro-mechanical method of constructing plaster stoppings developed from the Central rescue station of the Saarbergwerke AG (8th Report of the MSHC, Annex V, June 1971).

4. Fire-resistant fluids

- Report on the establishment of criteria for fire-resistant fluids used for power transmission (hydraulic fluids) and on the tests to be carried out for that purpose (2nd Report of the MSHC, Annex A, June 1971);
- Second Report on specifications and testing conditions relating to fire-resistant fluids used for power transmission (3rd Report of the MSHC, Annex IV a, November 1966);
- Third Report on specifications and testing conditions relating to fire-resistant fluids for power transmission (pamphlet 10th October 1967);
- Fourth Report on specifications and testing conditions relating to fire-resistant fluids for power transmission (pamphlet 26th March 1971).

5. The reopening of fire areas

- Report on the opening of sealed-off fire areas and the rules applicable thereto (3rd Report of the MSHC, Annex II, November 1966);
- Study on the reopening of sealed-off fire areas by Bergassessor a.D.G. Lehmann (3rd Report of the MSHC, Annex II a, November 1966).

6. Use of urethane foam for sealing

- Opinion on the use underground of polyurethane foam in the coal mining industry (7th Report of the MSHC, Annex VI, September 1970).

C - Electricity

- Decision on the removal of oil from resistors, condensers, transformers, switches and relays used underground (1st Report of the MSHC, April 1959);
- The use of non-flammable materials for the manufacture of electric cables and leads for underground use (2nd Report of the MSHC, page 5, June 1961);
- Requirements which must be met by electrical shotfiring leads (2nd Report of the MSHC, page 8, June 1961);
- Protection of the underground electrical network against the danger of electric shocks (2nd Report of the MSHC, page 11, June 1961);
- Report on investigations into the protection of underground electrical network against dangers arising from fires or from firedamp explosions (3rd Report MSHC, Annex VII, November 1966);
- Report on firedamp-proof electrical switchgear for nominal voltages above 1100 volts (3rd Report of the MSHC, Annex VIII, November 1966);
- Notes on the problem of heat transmission in an insulated conductor (3rd Report of the MSHC, Annex IX, November 1966);
- Report on characteristics and the electrical protection of power feed cables for mobile machines (cutters, loaders, etc.) used underground in the coalmines of the countries of the Community (7th Report of the MSHC, Annex V, September 1970);
- Comments and recommendations arising out of the report adopted by the Mines Health and Safety Commission on 20 June 1969 on the characteristics and electrical protection of cables supplying mobile machines (coal cutters, loading machines etc.) used underground in coalmines in the Community countries (8th Report of the MSHC, Annex IX, June 1971).

Bibliography

- Policy statement on the deleterious effects of dust-binding processes using saline pastes and powders upon electrical plant underground (9th Report of the MSHC, Annex IX, July 1972)
- Comparison of safety provisions concerning electric trolley locomotives underground and in particular, possibilities of reducing the incidence of trolley sparks (9th Report of MSHC, Annex X, July 1972)
- Report and conclusions on overvoltages caused by lightning (9th Report of the MSHC, Annex XI, July 1972)

D - Winding ropes and shaft guides

- Report on the electro-magnetic examination of winding ropes (3rd Report of the MSHC, Annex VI, November 1966);
- Final report on electro-magnetic tests carried out with the financial aid of the High Authority in the Bochum Rope-testing Station (3rd Report of the MSHC, Annex XI a, November 1966);
- Report on the use of accelerometers for testing winding installations (3rd Report of the MSHC, Annex V, November 1966);
- Report on measurement and testing procedures for shaft- and roadway winding ropes and for guides for shaft- and roadway haulage installations (7th Report of the MSHC, Annex VII, September 1970).

E - Combustible dusts

- Report on work done on the neutralization of combustible dusts and dusts barriers (7th Report of the MSHC, Annex VIII, September 1970).

F - Mechanization

- Recommendations concerning the equipment of locomotives (1st Report of the MSHC, April 1959);
- Recommendations concerning the neutralization of exhaust gases from diesel engines (1st Report of the MSHC, April 1959).

II - HEALTH PROTECTION AND ENVIRONMENTAL FACTORS

- Explanatory notes to the recommendation on "Fixing of climatic limits" (3rd Report of the MSHC, Annex X, November 1966);
- Recommendation on "Fixing of climatic limits" (3rd Report of the MSHC, Annex XI, November 1966);
- Recommendation embodying directives on means of suppressing dust concentrations in underground workings (8th Report of the MSHC, Annex VI, June 1971);
- Recommendation on the organization of special services responsible for the inspection of dust conditions in underground working (8th Report of the MSHC, Annex VII, June 1971);

- Statement on the need to reduce the dust concentration resulting from the use of coal-cutting and getting machinery and roadway drivage (8th Report of the MSHC, Annex VIII, June 1971).

III - HUMAN FACTORS

A - Medical problems

- Report on pre-entry and routine medical examinations and recommendations (2nd Report of the MSHC, page 74, June 1961);
- Colliery medical services in the countries of the Community and the United Kingdom (2nd Report of the MSHC, Annex C, June 1961).

B - Psychological and sociological factors in mine safety

- Report on the psychological and sociological factors affecting safety (3rd Report of the MSHC, Annex XII, November 1966);
- Recommendations on the psychological and sociological factors affecting safety (3rd Report of the MSHC, Annex XIII, November 1966).

C - Effects of remuneration methods on safety

- Report on the implications of payment at piece rates for mine safety (4th Report of the MSHC, Annex III, December 1967);
- Recommendations as to principles to be observed in view of the possible influence of payment at piece rates on safety in coal mines (4th Report of the MSHC, Annex IV, December 1967).



