

COMMISSION OF THE EUROPEAN COMMUNITIES

**20th REPORT
of the
Safety and Health Commission
for the mining and other extractive
industries**

YEAR 1982

VOLUME 1

**Volume 1 : Annual Report
Volume 2 : Annexes to the Report**

EUR 9734 EN

COMMISSION OF THE EUROPEAN COMMUNITIES

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of the
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Volume 1

Volume 2 contains the annexes to the Report

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Published by the
COMMISSION OF THE EUROPEAN COMMUNITIES
Directorate-General
Information Market and Innovation
Bâtiment Jean Monnet
LUXEMBOURG

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This publication is also obtainable in the following languages:

DE	ISBN 92-825-5591-7
FR	ISBN 92-825-5593-3
IT	ISBN 92-825-5594-1

Cataloguing data can be found at the end of this publication

Luxembourg: Office for Official Publications of the European Communities, 1985

ISBN 92-825-5592-5

Catalogue number: CD-NQ-85-A01-EN-C

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Printed in Belgium

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PART I

SECTION I

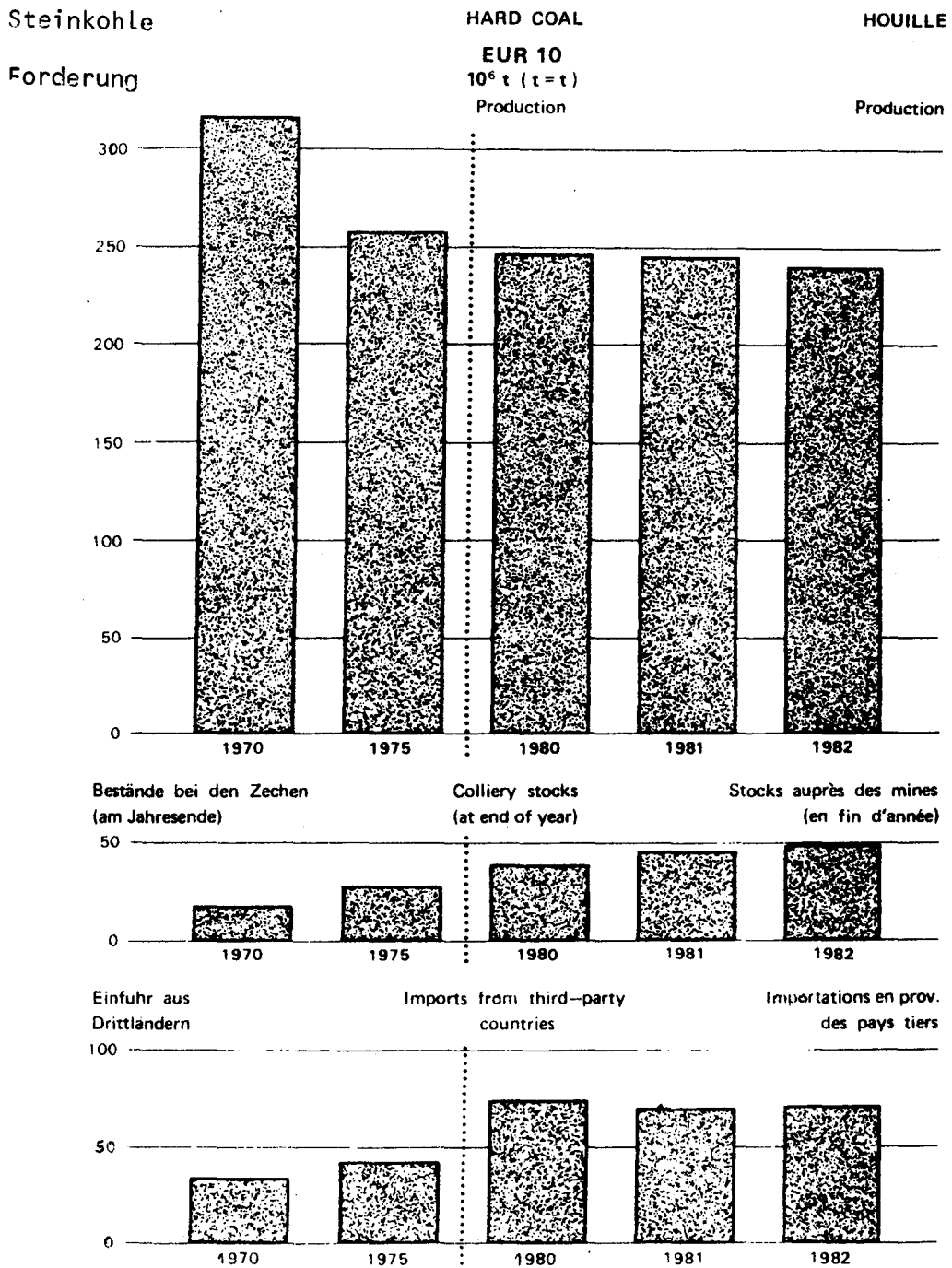
COAL MINING ACTIVITIES

STATISTICAL ASPECTS OF THE COAL ECONOMY IN 1982

- 1.1.1. The following information was extracted from the Statistical Telegrams published by the Statistical Office of the European Communities dated 25th January and 25th March 1983
- 1.1.2. Total primary energy consumption in the Community was 872 million tonnes of oil equivalent (approximately equal to 1,270 million tonnes of coal). This represents a decrease of 38 million tonnes or 4.1% as compared with 1981; there was a slight improvement in gross domestic product of 0.2%. Coal consumption was down by 4.2%, and lignite by 1.2%.
- 1.1.3. Of the total energy, 24.2% was produced from solid fuels of which 85% was from coal.
- 1.1.4. Total coal production in the Community was 241.3 million tonnes which was a fall of 4.4 million tonnes as compared with 1981. There were rises in production in Germany and Belgium of 0.8 and 0.4 million tonnes, and falls in France and the U.K. of 1.7 and 3.9 million tonnes respectively.
- 1.1.5. Despite this, by the end of 1982 pithead stocks had increased to a record level of 49 million tonnes, which represented a rise of 3.1 million tonnes for the year. Of this total, 21.3 million tonnes was in Germany and 21.8 million tonnes in the U.K.. In the latter case, although pithead stocks were reduced by 0.8 million tonnes during the year, stocks at power stations had increased by nearly 8 million tonnes.
- 1.1.6. Deliveries to coking plants fell by 5 million tonnes. Even so, stocks of coke at plants increased by 3.6 million tonnes.
- 1.1.7. The continued low demand for coal forced operators to seek new means of balancing the situation and this was reflected in a cutback in underground manpower of 11,000 (or some 3% of the total).
- 1.1.8. As production from the less economic mines was reduced, a rise in productivity occurred to 439 Kg/man hour.

1.1.9. Imports from third countries which stood at 70 million tonnes for 1982 were 0.7% lower than in 1981, the greater proportion of this was destined for France and Italy.

1.1.10. Further details of these trends are given in the following charts



ERSTE ERGEBNISSE
ZUR LAGE IN DER KOHLENWIRTSCHAFT
FÜR DAS JAHR 1982

(Vorläufige Angaben)

FIRST RESULTS
ON THE COAL INDUSTRY
IN 1982

(Provisional data)

PREMIERS RESULTATS
SUR L'ACTIVITE CHARBONNIERE
EN 1982

(Données provisoires)

	EUR 10	BR DEUTSCHLAND	FRANCE	ITALIA	NEDERLAND	BELGIQUE BELGIË	LUXEMBOURG	UNITED KINGDOM	IRELAND	DANMARK	ELLAS
STEINKOHLE	HARD COAL										
Förderung	Production										
	1 000 t (twt)										
1980	247 225	94 492	18 136	-	-	6 324	-	128 208	63	-	-
1981	245 640	95 545	18 589	-	-	6 136	-	125 301	69	-	-
1982	241 258	96 310	16 895	-	-	6 539	-	121 453	61	-	-
1981/80	- 0,6%	+ 1,1%	+ 2,5%	-	-	- 3,0%	-	- 2,3%	+ 6,2%	-	-
1982/81	- 1,8%	+ 0,8%	- 9,1%	-	-	+ 6,6%	-	- 3,1%	- 11,6%	-	-
Beschäftigte unter Tage	Personnel employed underground										
(Jahresdurchschnitt)	(yearly average)										
	1 000										
1981	347,6	123,9	28,9	-	-	16,2	-	178,3	0,3	-	-
1982	336,4	122,0	28,1	-	-	16,0	-	170,0	0,3	-	-
1982/81	- 3,2%	- 1,5%	- 2,8%	-	-	- 1,2%	-	- 4,7%	-	-	-
Leistung unter Tage je Mann und Stunde	Output per man and hour underground										
	kg = kg										
1981	433	531	376	-	-	267	-	392	-	-	-
1982	439	545	356	-	-	285	-	396	-	-	-
1982/81	+ 1,4%	+ 2,6%	- 5,3%	-	-	+ 6,7%	-	+ 1,0%	-	-	-
Bestände bei den Zechen	Colliery stocks										
(am Jahresende)	(at end of year)										
	1 000 t (twt)										
1980	37 202	13 306	5 798	-	-	164	-	17 904	30	-	-
1981	46 066	15 767	7 395	-	-	192	-	22 682	30	-	-
1982	49 171(*)	21 300(*)	5 508	-	-	450	-	21 883	30	-	-
1981/80	+ 23,8%	+ 18,5%	+ 27,5%	-	-	-	-	+ 26,7%	-	-	-
1982/81	+ 6,7%	+ 35,1%	- 25,5%	-	-	-	-	- 3,5%	-	-	-
Einfuhr aus Drittländern	Imports from third-party countries										
	1 000 t (twt)										
1980	74 447	7 265	22 632	14 299	5 022	7 337	215	7 175	910	9 060	532
1981	70 477	8 073	20 128	15 500	5 383	7 245	224	4 148	787	8 702	287
1982	70 008	8 600	17 000	16 300	7 000	8 521	250	3 587	650	7 600	500
1981/80	- 5,3%	+ 11,1%	- 11,1%	+ 8,4%	+ 7,2%	- 1,3%	+ 4,2%	- 42,2%	- 13,5%	- 4,0%	- 46,1%
1982/81	- 0,7%	+ 6,5%	- 15,5%	+ 5,2%	+ 30,0%	+ 17,6%	+ 11,6%	- 13,5%	- 17,4%	- 12,7%	+ 74,2%
STEINKOHLENKOKS	HARD COKE										
Erzeugung	Production										
	1 000 t										
1980	66 877	28 669	11 118	8 283	2 455	6 048	-	10 058	-	-	246
1981	64 305	28 160	10 723	8 071	2 242	6 004	-	9 060	-	-	45
1982	60 570	26 670	10 000	7 500	2 500	5 200	-	8 700	-	-	-
1981/80	- 3,8%	- 1,8%	- 3,6%	- 2,6%	- 8,7%	- 0,7%	-	- 9,9%	-	-	-
1982/81	- 5,8%	- 5,3%	- 6,7%	- 7,1%	+ 11,5%	- 13,4%	-	- 4,0%	-	-	-
Bestände bei den Kokereien	Stocks at coking plants										
(am Jahresende)	(at end of year)										
	1 000 t										
1980	10 726	6 480	602	661	40	106	-	2 789	-	-	48
1981	10 622	7 052	705	572	21	138	-	2 103	-	-	31
1982	14 256(*)	11 166(*)	800	600	80	160	-	1 400	-	-	50
1981/80	- 1,0%	+ 8,8%	+ 17,1%	- 13,5%	-	+ 30,2%	-	- 24,6%	-	-	- 35,4%
1982/81	+ 34,2%	+ 58,3%	+ 13,5%	+ 4,9%	-	+ 15,9%	-	- 33,4%	-	-	+ 61,3%
(*) einschliesslich Nationale Reserve :	(*) including national reserve :										
Steinkohle : 7 223 10 ³ t	Hard coal : 7 223 10 ³ t										
Koks : 2 977 10 ³ t	Coke : 2 977 10 ³ t										
	(*) y compris la réserve nationale :										
	Houille : 7 223 10 ³ t										
	Coke : 2 977 10 ³ t										

Millionen Tonnen

millions of tonnes

millions de tonnes

	EUR 10	BR DEUTSCHLAND	FRANCE	ITALIA	NEDERLAND	BELGIQUE BELGIË	LUXEMBOURG	UNITED KINGDOM	IRELAND	DANMARK	ELLAS
STEINKOEHLE			HARD COAL						HUILLE		
Lieferungen an sechensigene und öffentliche Kraftwerke (*)			Deliveries to public power stations and to pithead power stations (*)						Livraisons aux centrales électriques des services publics et des mines (*)		
1980	179,1	40,2	25,5	4,9	1,4	5,5	-	92,0	0,1	9,5	-
1981	176,5	43,0	22,6	6,6	2,1	5,8	-	86,6	0,1	9,8	-
1982	182,5	44,0	21,8	7,3	3,5	6,5	-	90,3	0,1	9,0	-
1981/80	- 1%	+ 7%	- 11%	+ 35%	+ 50%	+ 5%	-	- 6%	-	+ 3%	-
1982/81	+ 3%	+ 2%	- 4%	+ 11%	+ 67%	+ 12%	-	+ 4%	-	- 8%	-
Lieferungen an die Kokereien			Deliveries to coking plants						Livraisons aux cokeries		
1980	87,9	36,8	14,7	11,3	3,6	7,9	-	13,3	-	-	0,4
1981	85,2	36,2	15,0	10,9	3,3	7,6	-	12,2	-	-	0,1
1982	80,6	34,3	13,3	10,3	3,3	7,4	-	12,0	-	-	-
1981/80	- 3%	- 2%	+ 2%	- 4%	- 8%	- 4%	-	- 8%	-	-	-
1982/81	- 5%	- 5%	- 11%	- 6%	-	- 3%	-	- 2%	-	-	-
STEINKOEHLEKOKES			HARD COKE						COKE DE FOUR		
Lieferungen an die Eisen- und Stahlindustrie			Deliveries to iron and steel industry						Livraisons à l'industrie sidérurgique		
1980	54,2	19,8	11,6	6,4	2,3	6,3	2,3	5,3	-	0,1	0,2
1981	52,6	19,5	10,5	6,5	2,3	6,1	1,8	5,8	-	0,0	0,1
1982	47,1	16,5	9,5	6,0	2,2	5,0	1,8	6,1	-	0,0	0,0
1981/80	- 3%	- 2%	- 9%	+ 2%	-	- 3%	- 22%	+ 9%	-	-	-
1982/81	- 10%	- 15%	- 10%	- 8%	- 4%	- 18%	-	+ 5%	-	-	-

(*) einschliesslich Bergbauverbundkraftwerke
und die Kraftwerke der Bundesbahn
(Bundesrepublik Deutschland)

(*) including Bergbauverbundkraftwerke
and Federal railways power stations
(Federal Republic of Germany)

(*) y compris les Bergbauverbundkraftwerke
et les centrales des chemins de fer fédé-
raux (République fédérale d'Allemagne)

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SUMMARY OF ACCIDENT STATISTICS

- 1.2.1. The average personnel employed underground in the community Coal mining industry was 336.400 men, who worked some 548.6 mio. manhours, as compared with 347.600 men and 561.9 mio manhours the previous year.
- 1.2.2. The total number of fatalities occurring underground was 99, and in addition there were 5.341 accidents which resulted in absence from work of more than 56 days. These figures compare with 109 fatalities and 5.922 serious accidents in 1981. The improvement in both categories is to be welcomed.
- 1.2.3. Accidents resulting in 21 to 56 days of absence numbered 16.759 as compared with 18.339, whilst those resulting in 4 to 20 days numbered 40.305 as compared with 46.146 in 1981.
- 1.2.4. The main causes of fatal accidents were Falls of ground (34%) and Transport (35%); for those accidents resulting in more than 56 days of absence, the causes were more evenly spread, but some 32% were due to falls of the victim whilst moving about the mine, where no mechanical transport was involved.
- 1.2.5. Considering the frequency rates of the fatal and serious accidents taken together (based upon the total number of manhours worked underground), Falls of ground resulted in 1.78 accidents per million manhour; Transport, 1.47 accidents per million manhour; Falls of victims 3.20 accidents per million manhours; Machinery and Tools, 1.31 and other miscellaneous causes 2.13.
- 1.2.6. From an analysis of these figures it is apparent that a very large proportion of accidents occurs away from the face, and involve Stumbling, Falling and Slipping. The reasons for this seem to require investigation.
- 1.2.7. Looking at the total number of accidents which resulted in fatalities or absence from work for more than 3 days, these amounted to 62.504 in 1982 as compared with 70.534 in 1981, with a frequency rate of 113.9 as against 125.5 accidents per million manhours in 1981.

1.2.8. The salient points are summarised in the following table

CONCLUSIONS	CHANGE	NUMBER
Fatal accidents	Down 10 to	99
serious injuries	Down 581 to	5.341
56-21 Day accidents	Down 1.580 to	16.759
21- 4 Day accidents	Down 5.859 to	40.305
	—	—
TOTAL ACCIDENTS	Down 8.030 to	62.504
FREQUENCY/mio.manhour	Down 9,2% to	113.9

1.3.

ACTIVITIES OF ALL THE EXTRACTIVE INDUSTRIES

1.3.1. Section IV comprises tables giving the same data as for last year by country. Harmonization of this information is not sufficient to allow a Community table to be drawn up.

These tables include:

- a group of minerals which appear to lend themselves to an initial comparison most easily;
- a second group of more diversified minerals which are not uniform but which are significant for the country concerned in terms of production or value.

1.3.2. The number of plants or undertakings, the production and production unit is given for each product.

1.3.3. A distinction is made between three types of working: underground, opencast and by borehole.

The manpower figures, where available for each of these types of working does not, as far as possible, include administrative or commercial staff and those involved in mineral processing but do include workers employed on preparation (crushing, concentration, washing, loading).

THE COMMUNITIES DEPENDENCE ON ENERGY IMPORTS

- 1.4.1. The salient feature of 1982 was a rise of 13.6% in the energy generated from nuclear fuels, coupled with decreases of between 4 and 6% in the consumption of hydrocarbon fuels, with the exception of lignite where the fall was only 1.2%.

- 1.4.2. Imports, which accounted for 409,5 million tonnes oil equivalent out of 872,5 million tonnes, represent 46.9% of total consumption.

- 1.4.3. Of the total imports 304,1 million tonnes, or some 75% was crude oil.

- 1.4.4. The attached table which is extracted from Eurostat Annual Energy (Statistics, dated 25.3.1983) gives the overall position.

COMMUNITY ENERGY PRODUCTION AND IMPORTS (X)

		Eur.10	D	F	I	NL	B	L	UK	Ir	Dk
Coal in millions of t											
Production	1978	238,1	90,1	19,7	-	-	6,6	-	121,7	0,03	-
	1979	238,7	93,3	18,6	-	-	6,1	-	120,7	0,06	-
	1980	247,2	94,5	18,1	-	-	6,3	-	128,2	0,07	-
	1981	245,6	95,5	18,6	-	-	6,1	-	125,3	0,07	-
	1982	241,3	96,3	16,9	-	-	6,5	-	121,5	0,06	-
Imports from third countries	1978	45,3	5,7	15,9	9,9	3,4	2,7	0,2	2,0	0,62	5,04
	1979	58,2	6,2	19,5	11,3	3,9	5,9	0,2	4,0	0,85	6,5
	1980	73,9	7,3	22,6	14,3	5,0	7,3	0,2	7,2	0,91	9,1
	1981	70,4	8,1	20,1	15,5	5,4	7,2	0,2	4,2	0,79	8,7
	1982	70,0	8,6	19,0	16,3	7,0	8,5	0,3	3,6	0,65	7,6
Lignite											
Production	1978	128,2	123,6	2,7	1,9	-	-	-	-	-	-
	1979	135,1	130,6	2,4	2,1	-	-	-	-	-	-
	1980	134,4	129,9	2,6	1,9	-	-	-	-	-	-
	1981	135,5	130,6	3,0	1,9	-	-	-	-	-	-
	1982	157,7	127,4	3,0	1,9	-	-	-	-	-	-
Crude oil in millions of t											
Production	1978	62,2	5,1	1,1	1,5	1,5	-	-	52,6	-	0,4
	1979	86,6	4,8	1,2	1,7	1,5	-	-	77,0	-	0,4
	1980	88,1	4,6	1,4	1,8	1,6	-	-	78,4	-	0,3
	1981	99,5	4,5	1,7	1,5	1,6	-	-	89,5	-	0,8
	1982	112,5	4,2	1,6	1,7	1,9	-	-	100,2	-	1,7
Imports from third countries	1978	475,5	90,6	114,0	110,4	54,1	32,7	-	66,3	2,2	5,2
	1979	486,3	97,3	123,0	114,7	52,9	33,1	-	57,9	2,2	5,2
	1980	415,2	89,1	110,7	92,2	46,0	31,5	-	44,5	1,9	4,3
	1981	342,3	65,1	88,9	89,3	34,6	26,3	-	34,6	0,6	3,1
	1982	315,2	59,0	72,8	84,5	29,3	23,7	-	30,5	0,2	2,9
Natural gas in 1000 Terajoules (gcv) (XX)											
Production	1978	6192,6	719,9	307,1	526,0	3120,2	1,3	-	1517,6	0,4	-
	1979	6375,8	741,9	301,5	500,0	3308,8	1,3	-	1498,0	24,3	-
	1980	6008,7	662,9	294,2	477,3	3101,6	1,5	-	1436,9	34,3	-
	1981	5835,0	680,0	276,7	537,7	2833,6	1,5	-	1453,2	52,2	-
	1982	5311,2	589,2	259,3	556,3	2439,8	1,3	-	1392,9	76,4	-
Imports from third countries	1978	1410,8	505,5	185,8	403,4	61,9	54,9	-	199,3	-	-
	1979	1735,7	615,3	199,5	395,5	98,4	80,0	-	347,0	-	-
	1980	1970,3	719,8	318,6	294,6	133,2	85,5	-	418,6	-	-
	1981	2092,2	728,0	429,3	282,9	117,9	86,0	-	448,2	-	-
	1982	2092,4	668,8	503,3	326,4	119,2	92,1	-	382,6	-	-

(X) Taken from Eurostat publications of 25 March 1983 and 3 March 1983.
 (XX) At 35,17 Megajoules/m³ 0° 1,01 bar, 1.000 Terajoules = 28,4 x 10⁶ m³.

**SUBDIVISION OF THE PRINCIPAL
AGGREGATES OF THE ENERGY BALANCE—SHEET**

Provisional data 1982

10⁶ t ROE/toe/bwp

	EUR 10			EUR 9		
	1981	1982	82/81	1981	1982	82/81
1. Inlandconsumption	909,9	872,2	- 4,1%	895,0	857,0	- 4,2%
of which :						
11 hardcoal (1)	186,4	178,5	- 4,2%	186,2	178,2	- 4,3%
12 lignite (and peat) (1)	33,5	32,9	- 1,2%	30,1	29,5	- 1,3%
13 crude oil (1)	451,8	425,5	- 5,7%	440,9	414,4	- 6,0%
14 natural gas	165,8	155,7	- 6,1%	165,8	155,7	- 6,1%
15 nuclear energy	56,6	64,3	+ 13,6%	56,6	64,3	+ 13,6%
16 primary electrical energy and others	15,8	15,3	- 3,2%	15,5	14,9	- 3,9%
2. Net imports (2)	444,4	409,5	- 7,9%	432,2	398,7	- 7,8%
among which :						
21 hard coal	43,2	41,7	- 3,5%	43,0	41,4	- 3,7%
22 crude oil	351,5	304,1	- 13,5%	335,4	290,4	- 13,4%
23 natural gas	42,6	43,4	+ 1,9%	42,6	43,4	+ 1,9%
24 petroleum products	6,3	19,4	+207,9%	10,4	22,7	+128,3%
3. Production of primary energy	484,0	490,8	+ 1,4%	480,1	486,0	+ 1,2%
of which :						
31 hard coal (3)	154,1	152,2	- 0,3%	154,1	152,2	- 1,3%
32 lignite (and peat)	32,4	31,6	- 1,9%	29,0	28,2	- 2,1%
33 crude oil and condensates	101,3	114,8	+ 13,3%	101,1	113,7	+ 12,5%
34 natural gas	125,2	114,2	- 8,8%	125,2	114,2	- 8,8%
35 nuclear energy	56,6	64,3	+ 13,6%	56,6	64,3	+ 13,6%
36 primary electrical energy and others	13,9	13,8	- 0,7%	13,6	13,5	- 0,7%
4. <u>Net imports (2)</u>						
Inlandconsumption + bunker	47,5%	45,6%		47,0%	45,2%	
Total	38,2%	36,1%		37,6%	35,5%	

(1) Including the balance of foreign trade and stock changes of derived products

(2) Imports minus exports

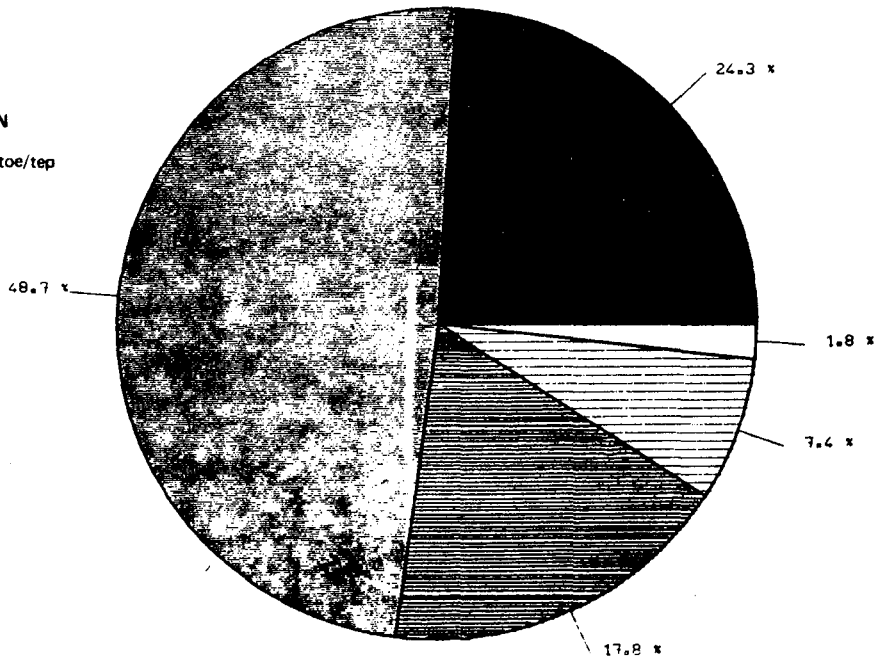
(3) Including recovered products

SOURCE OF PRIMARY ENERGY 1982 : TOTAL FOR THE

EUROPEAN ECONOMIC COMMUNITY

VERBRAUCH
CONSUMPTION
CONSOMMATION

872,2 10⁶ ROE/toe/tep



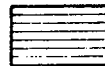
Kohle
Coal
Charbon



Rohöl
Crude oil
Pétrole brut



Naturgas
Natural gas
Gaz naturel



Kernenergie
Nuclear energy
Energie nucléaire



Primärelektrizität
Primary electricity
Electricité primaire

PART I

SECTION II



GENERAL ACTIVITIES OF THE SAFETY AND HEALTH COMMISSION

1. Meetings held

The Safety and Health Commission for the Mining and Other Extractive Industries held two plenary sessions, on 19 May 1982 and 23 November 1982.

Each of these meetings had been prepared by meetings of the Restricted Committee on the previous day.

The Working Parties met sixteen times; as is now sound established practice, restricted committees of experts met in order to prepare the meetings.

The Working Party on Rescue Arrangements, Mine Fires and Underground Combustion held a meeting in Hasselt on 12 and 13 October 1982, when the 25th Anniversary of the Foundation of the 'Coördinatiecentrum Reddingswezen' was celebrated. During the commemorative meeting of 12 October 1982 and in the presence of a large audience, a series of speakers - from a variety of lecturers - stressed the role of the Safety and Health Commission, since its institution, in the field of mines safety, particularly in organizing rescue arrangements at the European level.

A booklet marking this event and reproducing all the papers presented is obtainable from the Secretariat of the Safety and Health Commission.

The Working Party on Winding Ropes and Shaft Guides, Winding Engines and Winches met at the Gardanne mine (Houillères de Provence) on 5 and 6 October 1982. It visited the sinking of the 10-metre diameter shaft "Y" and observed the specific characteristics of the structure with its unconventional dimensions. This visit was combined with an ordinary meeting of the Working Party; the Group of Experts also had an opportunity to view a modern face in the mine, while others visited the new coal-fired power station currently being built.

2. Group accidents

No group accidents corresponding to the usual definition occurred in 1982 ^{x)}.

3. Decisions of the Safety and Health Commission

The following proposals were approved for submission to governments in accordance with Article 1 of the terms of reference of the Safety and Health Commission :

Rescue arrangements - Mine Fires and Underground Combustion

- Early detection of fires in mines (Doc. 3258/6/81).

Adopted on 19 May 1982.

Mechanization

Safety techniques in the operation of belt conveyors (Doc. 2193/11/77). Adopted on 19 May 1982.

Oil and gas

- Basic information which should be contained in drilling programmes of onshore wells. (Doc. 5657/1/82). Adopted on 23 November 1982.
- Drilling wellhead safety installations onshore. (Doc. 5730/1/82). Adopted on 23 November 1982.
- Production well completion onshore. (Doc. 5731/1/82). Adopted on 23 November 1982.
- Workover programmes onshore. (Doc. 5732/1/82). Adopted on 23 November 1982.
- Well control drills onshore and training of personnel in charge of well operations (Doc. 5733/1/82). Adopted on 23 November 1982.

Electricity

- Work on bare live conductors. (Doc. 5210/8/81). Adopted on 23 November 1982.

x) Group accidents : accidents involving more than 5 persons killed or incapacitated for work for longer than 56 days.

In addition to these proposals to governments, the Safety and Health Commission took cognizance of documents resulting from the activities of the Working Parties and recommended that they be disseminated. The documents are the following reports :

Rescue Arrangements, Mine Fires and Underground Combustion

- The maintenance procedures and training of personnel where chemical oxygen self-rescuers are provided for use in emergency (Doc. 2593/3/81) - Meeting of 19 May 1982.
- The quality control testing of conveyor belts with textile carcass for use in coal mines with reference to fire resistance (2nd report - Doc. 3471/3/81) - Meeting of 19 May 1982.
- Rescue of trapped miners by means of large-diameter boreholes drilled from underground (Doc. 5469/81) - Meeting of 19 May 1982.

N.B. An educational film covering all rescue operations has been produced by the Charbonnages de France with the financial assistance of the ECSC.

Winding Ropes and Shaft Guides, Winding Engines and Winches

- Action required to permit reliable estimation of the work capacity of dynamically stressed components of winding and haulage installations made of high-tensile steels (Doc. 3891/80) - Meeting of 19 May 1982.
- Safety regulations for winding ropes and cappings (Doc. 5379/4/78) - Meeting of 23 November 1982.

Health in Mines

At its meeting of 19 May 1982, the Safety and Health Commission gave its opinion on "studies to compare the various gravimetric dust measuring and evaluating methods used in the coal

mining industry of Member States of the European Community"
(Doc. 2125/1/81 and Doc. 5205/2/81).

This opinion is given in full in the minutes of the Working Party on Health in Mines (page of this report).

Human Factors Affecting Safety

- Report on workers' participation in the inspection of underground mines in the European Community for safety and health purposes (Doc. 6250/3/1980).

It should also be noted that the Safety and Health Commission, at its meeting of 23 November 1982, gave an opinion in principle on two documents which, however, must be resubmitted after modifications to the presentation, classification of the proposals contained therein and amendments to the text :

- Proposals to governments

"The use of diesel engines underground in the extractive industries" (Doc. 5509/11/80).

"Proposals on noise" (Doc. 6290/2/82)

- Information report (if necessary, to be amended at a later stage into a proposal to governments).

4. Symposium for engineers of the mining administrations of the Member States of the European Community

An information meeting was held in Luxembourg on 14 and 15 December 1982 for engineers from the mining administrations of the Member States of the European Community. The meeting focused on the theme :

"The activities of the Safety and Health Commission for the Mining and Other Extractive Industries".

The Safety and Health Commission thus sticks to established practice in regularly organizing such information meetings

for each of the parties it represents.

The agenda for the first day was subdivided into two parallel meetings, the first given over to firefighting and prevention of combustion in mines, control of firedamp and dust explosions, ventilation and dilution of firedamp emissions and electricity. The second session dealt with health in mines, the influence of human factors, safety during oil and gas prospecting and extraction operations, haulage of heavy and awkward loads, and safe use of mine ropes. An interesting panel discussion revealed the centres of interest and the guidelines to be followed in future work and also the need for the Safety and Health Commission to liaise closely with national administrations.

One hundred and ten engineers attended the symposium. On 15 December 1982, visits were arranged to coal and iron ore mines in Lorraine and the Saar. Other participants went to two rescue stations, while others went to Völklingen in the Saar to visit an electricity generating station incorporating a fume desulphurization plant.

5. Safety campaigns

The four safety campaigns entered in the 1981 budget took place in 1982.

These were :

- improvement of safety in exploiting and exploring for oil and natural gas (Germany). A film was produced and shown at meetings of the Working Parties on Human Factors Affecting Safety, on Oil and Gas and to the Safety and Health Commission itself;
- prevention of accidents relating to falls, travelling and movement of mines underground (France);

- prevention of coal dust explosions (France);
- action towards improving occupational safety for new entrants to the mining industry (Germany - United Kingdom).

The 1982 budget enabled two other campaigns to be financed :

- improvement of offshore diving safety (United Kingdom). In this case, too, an educational film is being prepared;
- prevention of accidents related to falls and slipping (Ireland).

This latter campaign is intended for the personnel in all extractive industries.

The Secretariat of the Safety and Health Commission is gratified at the diversification which is beginning to extend the safety campaigns to all the extractive industries and involving countries which had not hitherto taken part in such activities.

6. The functioning of the Safety and Health Commission and its Working Parties

In 1982, the activity of the Working Party on Health in Mines, which had been prepared during 1981 by the work of committees of experts on "Respirable Dust" and "Noise" went ahead according to plan.

As for the Working Party on Human Factors affecting Safety, its active participation in the preparation and development of Community research into developing new refresher training methods and assessing their potential for reducing accidents, should be noted.

This research, conducted with substantial financial aid from the ECSC, is being undertaken by four countries and started on 1 November 1982.

It is part of the second programme of ECSC research on safety in mines, subsequent to the Commission Decision of 5 July 1982.^(x)

(x) Official Journal of the European Communities No C 195 of 29 July 1982.

This programme also includes the main themes handled by the Safety and Health Commission, and can thus cater for their development through research.

At the end of the year, arrangements were made to give a fresh start to the activities of the Working Party on Common Accident Statistics, particularly in the field of oil and gas and extractive industries other than coalmining.

7. Studies

The studies selected and undertaken in 1982 as part of the activities of the Safety Health Commission's Working Parties are as follows :

Prospective study of the problems of data transmission in shafts, particularly during the rescue of persons or recovery of equipment.

Initial study of the problems of inspecting offshore oil rigs and platforms for their structural safety.

Study of systems for monitoring combustible mixtures in mine air ; analysis of the results, and their interpretation as a means of protecting rescue personnel fighting fires and explosives underground, especially during the sealing-off operation.

Study of the methods of monitoring and measurement which should be used to evaluate the real hazard to health posed by physical agents and conditions (excluding respirable dust) in mines.

8. Council Directives

- a) Council Directive of 15 February 1982 on the approximation of the laws of the Member States concerning electrical equipment for use in potentially explosive atmospheres in mines susceptible to firedamp¹⁾.
- b) Council Directive of 28 July 1982 on the protection of workers from the risks related to exposure to metallic lead and its ionic compounds at work (first individual Directive within the meaning of Article 8 of Directive 80/1107/EEC²⁾.

Paragraph 2 of Article 1 stipulates that : "This Directive shall not apply to mining and quarrying of lead-containing ores and the preparation of lead-ore concentrate at the site of the mines or quarry".

The Commission intends asking the Safety and Health Commission to draw up a corresponding document on mining activities not covered by this Directive. It has been agreed that this subject would be brought to the attention of the Working Party on Health in Mines.

The 'asbestos' Directive is still before the Council³⁾.

The Commission submitted to the Council on 18 October 1982 its 'proposal for a Directive on the protection of workers from the risk related to exposure to chemical, physical and biological agents at work : noise⁴⁾'.

In the chapter on the Working Party on Health in Mines, there is a brief summary of the activities of this Working Party on the same subject in underground workings.

1) Official Journal of the European Communities No L 59 of 2 March 1982
2) Official Journal of the European Communities No L 247 of 23 August 82
3) Official Journal of the European Communities No C 301 of 18 Nov. 1982
4) Official Journal of the European Communities No C 289 of 5 Nov. 1982.

9. Examination of the 19th report of the Safety and Health Commission

The 19th report (1981) was approved by the Safety and Health Commission at its meeting on 19 May 1982.

The 18th report (1980) was presented to the ECSC Consultative Committee on 24 September 1982. No special comments were made.

10. Secretariat

As usual, there is an annex to the present report giving a breakdown of the tasks allotted to the members of the Secretariat of the Safety and Health Commission and their management of the existing Working Parties.

The annex also provides a complete list of the groups of experts convened by the Safety and Health Commission to deal with the problems it is responsible for under its terms of reference.

The reports on the activities of the Working Parties show that some of these parties were unable to make the headway hoped for. Certain activities had sometimes to be foregone somewhat abruptly in order to deal with higher priorities. The limited resources of the Secretariat are familiar and the situation was no different in 1982.

The year 1982 marked the 25th anniversary of the existence of the Safety and Health Commission, the 9 July 1957 being the date it was set up subsequent to a special decision by the governments of the then six-strong Community.

A booklet of a historical and retrospective nature is currently being prepared to commemorate the event.

PART II

ACTIVITIES OF THE WORKING PARTIES

ACTIVITIES OF THE WORKING PARTIES

CHAPTER A

RESCUE ARRANGEMENTS, MINE FIRES AND UNDERGROUND COMBUSTION

There were two full meetings of the Working Party, the first in Luxembourg on 17 March 1982 and the second in Hasselt (Belgium) on 12 and 13 October 1982. In addition, committees of experts met to discuss the problem of fire resistant fluids, the preparation of the sixth report on the specifications for these fluids, arrangements for the prevention and detection of underground fires and the sealing-off of districts.

The working meeting held in Hasselt was combined with a meeting to commemorate the 25th anniversary of the setting up of the "Coördinatiecentrum Reddingswezen" in Hasselt (see chapter on the general activities of the Safety and Health Commission).

This formal meeting was preceded by a visit to the Hasselt rescue station where various oxygen self-rescuers were demonstrated by personnel accompanied by others carrying measuring instruments.

There was also an opportunity to see equipment for continuously monitoring the amount of energy expended at the place of work and for continuous recording of certain ergonomic data during effort.

The report on "The early detection of fires in mines" (Doc. 3258/6/81) was adopted by the Safety and Health Commission at its meeting on 19 May 1982 as an information report.

It is a five-part document supplemented by three technical annexes providing tables indicating the combustion products obtained by heating the various materials found in mines, and the pollutants present in the mining environment likely to affect systems for the early detection of fires and heatings.

The third annex lists the types of equipment (either on the market or currently being developed) used for the early detection on mine fires.

The document as such condenses into a small volume a large quantity of information on mine fires, their characteristics, the various detection methods which exist or which are being developed, and the essential requirements to be met by all systems if effective protection of the workings is to be afforded.

The fifth part, the conclusion, lists a package of seven proposals to governments on the basis of the foregoing considerations.

The Committee of Experts which deals with fire resistant fluids met on 17 September 1982 and on that occasion put the finishing touches to the 'Sixth report on fire-resistant hydraulic fluids used in coal mines - specifications and testing conditions'.

The document has to be translated into the various official languages and this substantial report will be available sometime in 1983.

This sixth report is an updating of the fifth report dating back to 1974 and was made necessary by technological development. The report may be useful not only in coalmining, but also in other industries where fire resistant fluids have to be used to reduce

the risk of fire in power transmission systems.

The second report on the quality control testing of conveyor belts with textile carcass for use in coal mines with reference to fire resistance (Doc. 3471/3/81) was accepted on 19 May 1982 by the Safety and Health Commission as an information report.

The report summarizes the experience gained through two types of tests : those based on the Barthel burner and those based on the critical oxygen index as described in Doc. No 1479/8/77^(x). It does not choose between these two tests, but describes their possible fields of application and consequently recommends that they be maintained.

The Working Party, with the assistance of a restricted group of experts, began to assemble information for a study covering the techniques of sealing off burnt out or burning districts. The first stage of this project will be to collate the experience gained in the different mining areas, after which an attempt can be made to establish a code of sound practice for safety experts. This document could be available in 1984.

(x) See 19th report of the Safety and Health Commission.

CHAPTER B

WINDING ROPES AND SHAFT GUIDES, WINDING ENGINES
AND WINCHES

The Working Party held one full meeting at Gardanne (France) on 5 and 6 October 1982. The necessary documents were prepared at a restricted meeting.

The Safety and Health Commission in 1982 recommended dissemination of the information contained in Doc. 3891/80 entitled 'Reliable assessment of the work capacity of dynamically stressed components of winding and haulage installations made of high-tensile steels'. This document had been drawn up by the late Dr. H. Arnold. Similarly, the Safety and Health Commission took note of Doc. 5379/78 entitled 'Safety regulations for winding ropes and cappings'.

The latter is a synthesis of the minimum safety requirements and directives in force in the Member States.

It thus condenses into a compact and practical volume a series of data (breaking loads, safety coefficients, monitoring, inspections, losses or stranding, etc) which are significant and useful from the point of view of preparation of future projects for the Working Party.

The Working Party's programme of work for the years 1983-87 was accepted by the Safety and Health Commission at its meeting on 23 November 1982. It sets out the priority tasks in the field and puts forward certain themes for research (Doc. 3257/2/81).

CHAPTER C

ELECTRICITY

The Working Party held two full meetings on 9 March 1982 and 3 June 1982.

The discussions were prepared by six restricted or drafting meetings.

The Council adopted the Directive on the approximation of the laws of the Member States concerning electrical equipment for use in potentially explosive atmospheres in mines susceptible to firedamp, on 15 February 1982^(x).

This Directive will come into force on 2 September 1983 and electrical equipment for use in mines susceptible to firedamp can thereafter circulate freely within the Community provided it complies with the harmonized European standards and requirements laid down in this Directive.

The Safety and Health Commission at its meeting of 23 November 1982 adopted the proposal to national governments drawn up by the Working Party on 'Work on bare live conductors' (Doc. 5210/8/81).

This proposal arose following a long series of accidents in Community mines occasioning the death of 78 miners between 1965 and 1979 and caused by firedamp ignited by electric sparks while electricians were working on live equipment. The analysis of these accidents brought out four common points :

- abnormal increase in firedamp levels in three of these accidents, subsequent to disruption in the ventilation prior to the accidents;

(x) Official Journal of the European Communities No L 59 of 2 March 1982.

- there was apparently no check on the firedamp level immediately upwind and in the vicinity of the area in which the electricians were working;
- the electricians were working on unprotected live electrical equipment in order to repair or modify it;
- it seems that there was not always coordination between the electricity department and the mining department.

The proposal to the governments comprises a series of measures devoted exclusively to the risk of electrocution, including burns which occur during work in mines or districts not liable to be affected by firedamp.

Nevertheless, these measures, which may be taken in a specific framework, are subordinated to the decision of the state authority responsible for authorizing work on or in the vicinity of bare live components.

These proposals are preceded by an analysis of the regulations in force in the Member States.

In accordance with its terms of reference the Working Party began work on 'Connecting devices'. A rough draft has been prepared and studied by the Working Party and could be forwarded to the Safety and Health Commission in 1983.

CHAPTER D

FLAMMABLE DUSTS

In 1982 the Working Party reverted to its normal pattern of work. Two full meetings were held, on 10 March 1982 and 3 November 1982.

The documents to be discussed were prepared by three restricted meetings.

The symposium held on 5 November 1981 and mentioned in the 19th report of the Safety Health Commission gave rise to the publication of a booklet which is obtainable from the Secretariat^(x).

Significant among the many new activities of the Working Party is

- a comparative analysis of the practical application of water-trough barriers in the United Kingdom and on the continent (Doc. 5370/82). This document clears up several misunderstandings and was drawn up after a study visit.

The Working Party took note of the latest developments achieved through practical tests on water-trough barriers in Germany (Doc. 5473/82).

The advantage of wide-action barriers was apparent even in the case of slowly-propagating explosions. This arrangement of the troughs is in fact effective in suppressing an explosion because among the different lines of troughs there is always one which is exposed to the optimum pressure for it to function. Methane concentrations varied from 7 to 12%; explosion velocity varied between 25 and 600 m/s. The maximum speed recorded was 1000 m/s.

(x) EUR 7908

There is a highly significant film on these tests, showing in detail how an explosion originates, spreads, crosses through the barriers and stops.

With a view to planning its work schedule, the Working Party has drawn up a five-year programme (Doc. 5964/3/81) covering the period 1982-87.

This document was supplemented by Documents published since 1 January 1971 (Doc. 5749/82), including those submitted at the symposium held on 5 November 1981.

The "Memento" drawn up in 1971 (Doc. 650/1/71) has been brought up to date; it includes a questionnaire to be completed by enterprises and to be sent to the competent authorities, with a copy to the Safety and Health Commission (Doc. 6538/82).

The purpose of this questionnaire, which could later on be processed by computer, is to yield data on accidents involving explosions with a view to preventing such occurrences.

The Working Party noted three research projects to be included in the safety in mines programme.

The first involves the study of explosions with a long build-up (> 150m) and the means of neutralizing them (Experimental mine - Dortmund).

The second concerns the methods for sampling neutralized dust and envisages the establishment of statistics and conclusions (Iniex - Colfontaine).

The third concerns the prevention of the onset of a dust explosion by partial nitrogen inertisation. The intention is to achieve inertisation of the atmosphere behind the stoppings

constructed in the event of fire (Cerchar-Paris).

Lastly, the Working Party took note of accidents which had occurred in Community mines; no casualties had been recorded.

CHAPTER E

COMMON ACCIDENT STATISTICS

The Working Party did not meet in 1982.

At the end of the year, it was envisaged to start these activities again, particularly as regards oil and gas drilling operations.

Special terms of reference for this context were drawn up by the Safety and Health Commission on 23 November 1982.

CHAPTER F

HEALTH IN MINES

The composition of this Working Party was recast in order to meet its new responsibilities and met on 26 March and 22 October 1982.

Two documents were examined and submitted to the Safety and Health Commission. The first concerns dust measurement and is the report on a Community research project entitled : " Studies to compare the various gravimetric dust measuring and evaluating methods used in the coalmining industry of the Member States of the European Communities"^(x).

This project involved the measurements of dust concentrations recorded by the different samplers, and the assessment of dust concentration classifications in workings resulting from these measurements and the national regulations.

The Safety and Health Commission gave its opinion on this report (Doc. 5205/2/81), noting that there is a close correlation between the measurements of dust concentrations recorded by the different samplers, taken two by two in each country and used in the same way as in their country of origin.

It is thus possible to estimate the dust level the apparatus would have indicated from the value provided by any one of the other samplers used instead of it in a working having the same average characteristics as those underlying the national campaign under consideration.

(x) ECSC research contract no 6253-23-2-072

The assessment of dust-related hazards made in each country has shown that, in general, the workings are ranked in the same order of hazard whatever the method employed.

The second document entitled : "Proposals on noise" (Doc. 6290/2/82) presents the opinion of the Safety and Health Commission on the regulations concerning noise in underground workings.

The presentation of this document is virtually concomitant with that of the Commission's draft directive to the Council. It is thus somewhat difficult for the delegations to examine two documents on the same subject and containing certain variants. However, by virtue of its terms of reference, the Safety and Health Commission has a solid basis for submitting proposals relating to the extractive industries to national governments.

Moreover, it is not clear, at the time of this report, whether the Council will or not include mines in the scope of its directive.

The discussions on the document brought out two sets of arguments :

- mines constitute a very specific working environment; this is made perfectly clear in the first part of the document;
- nevertheless, under no circumstances should miners be afforded less protection than the workers of any other industrial sectors.

Consequently, the document has been acknowledged as valid for mines; it will be reviewed by the Safety and Health Commission at the start of 1983. For the time being, it is to be considered as an information report to be submitted to the national governments; it will thus fulfil the purpose for which it was intended.

Depending on the progress made in drawing up the Council directive and the provisions it will contain, this information report may subsequently be changed into a proposal to the national governments in accordance with the terms of reference of the Safety and Health Commission.

CHAPTER G

HUMAN FACTORS AFFECTING SAFETY

The Working Party held one full meeting on 1 July 1982. The meeting had been prepared by a restricted meeting.

The committee responsible for preparing, and subsequently, organizing the Community research project included in the "Safety in Mines" programme met four times.

At its meeting on 19 May 1982, the Safety and Health Commission adopted the information report entitled "Report on workers' participation in the inspection of underground mines in the Community for safety and health purposes" (Doc. 6250/3/80).

The Working Party took note of the final reports on the two safety campaigns financed by the Community in 1981, viz.:

- Manipulation of supports at the face or face ends (Belgium).
- Handling of heavy loads (Germany).

The recent safety campaigns were supplemented by a series of educational films, including :

- Prevention of accidents and industrial diseases in the quarries of Tuscany (ENPI-Rome);
- Prevention of accidents in exploiting and prospecting for oil and natural gas (produced by the Steinbruchsberufsgenossenschaft Hannover);
- Hazard-free materials handling (Charbonnages de France).

The Working Party expressed a favourable opinion on subsidizing a film on accident prevention during offshore diving in the context of oil drilling.

The Working Party and the research committee got down to the task of preparing and organizing the Community research programme on developing new refresher training methods and assessment of their potential for reducing accidents (see Chapter 6).

The coordination committee comprising the research project leaders meets from time to time under the chairmanship of a member of the Working Party so as to ensure good coordination of the work, objectives and forwarding of results (see annex for composition).

CHAPTER H

VENTILATION, FIREDAMP AND OTHER MINE GASES

During 1982, the Working Party held two full meetings, on 7 January and 3 November 1982.

The documents discussed were prepared by a restricted meeting.

The draft proposal to governments entitled "Requirements for workings with auxiliary ventilation in which dust control and air conditioning equipment is used in mines subject to firedamp hazard" is being finalized and could be submitted to the Safety and Health Commission in 1983.

The Working Party examined the details of the Ibbenbüren accident (21 August 1981) when an outburst of firedamp occurred accompanied by the projection of a large quantity of coal; eight miners were killed and seven others injured.

It was decided to organize a symposium on the problem of outbursts; this would provide an opportunity to keep abreast of the latest experience gained in this field. The reference document will be the study drawn up by Mr Belini^(x).

The "Study of the combinations of materials suitable for the impellers and housing of auxiliary fans, in order to reduce the hazard of sparks being produced by friction between the constituent parts" was finalized by the Health and Safety Executive Explosion and Flame Laboratory (SMRE) on the basis of material supplied by Belgium, France and Germany.

(x) See 19th Report of the Safety and Health Commission

The final report on these tests was submitted on 3 November 1982 to the Working Party which will continue its examination and draw up its proposal in 1983.

The Working Party studied the events leading up to the Cardowan (United Kingdom) explosion on 27 January 1982.

This explosion once again stressed the importance of problems related to auxiliary ventilation, of the risk of firedamp ignition represented by winning and drivage machines, and also of the high level of coordination necessary between the various operations undertaken in underground.

CHAPTER I

MECHANIZATION

The Working Party on Mechanization held one full meeting on 23 February 1982, for which the documents were prepared by two restricted meetings.

The Safety and Health Commission thus finally received the proposal relating to "Safety techniques for belt conveyors" (Doc. 2193/11/77), which it approved at its meeting of 19 May 1982.

This document analyses the main causes of accidents arising from the operation of belt conveyors.

In accordance with its terms of reference, it formulates primary safety measures relating to construction and installation, to the transmission of motive power, to controls, to braking systems, to cleaning devices and to the adaptation of the belt conveyor to the workload it must take.

Secondary safety measures concern the closing off of hazard areas, signalling arrangements, stopping systems and monitoring. Moreover, a specific set of rules has been drawn up for mansiding installations and safety instructions prepared.

The Working Party is currently preparing two studies.

The first concerns the "Safety problems in the operation of overhead monorails, in particular when used for mansiding and on sloping and curved sections".

The problem raised by monorails also fall within the sphere of activity of the Working Party on Winding Ropes etc., which means that cooperation between the two working parties is necessary; this will be arranged.

The second study deals with the safety problems involved in locomotive haulage.

The stage the document has reached means that it can probably be adopted by the Safety and Health Commission in 1983.

CHAPTER J

STRATA CONTROL AND STABILITY OF GROUND

The Working Party did not meet in 1982 because of priorities established for other sectors.

CHAPTER K

OIL, GAS AND OTHER MATERIALS EXTRACTED BY BOREHOLE

Two meetings of the Working Party were held on 24 February 1982 and 30 September 1982.

The discussions on onshore drilling were prepared by two restricted meetings

A special meeting on 22 June 1982 convened the sector specialists for their opinion on the safety measures to be taken for these drilling operations.

A restricted meeting discussed safety training for offshore drilling operations.

Lastly, the preparation of the international symposium on "Safety and Health in the Oil and Gas Extractive Industries (Luxembourg, 19 and 20 April 1983) involved two meetings of experts.

A series of six documents containing six proposals to governments and concerning onshore drilling operations was prepared in 1982. This involved adapting to onshore installations the rules governing offshore installations already accepted by the Safety and Health Commission (see 18th and 19th reports):

- Basic information which should be contained in drilling programmes of onshore wells (Doc. 5657/1/82).
- Drilling wellhead safety installations onshore (Doc. 5730/1/82).
- Production well completion onshore (Doc. 5731/1/82).
- Workover programmes onshore (Doc. 5732/1/82).

- Well control drills onshore and training of personnel in charge of well operations (Doc. 5733/1/82).
- Documentation on onshore wells (Doc. 5735/1/82).

All these proposals were accepted by the Safety and Health Commission at its meeting on 23 November 1982.

The 7th proposal concerning a "Method of presenting statistics of accidents resulting from the exploration for and exploitation of minerals by borehole (onshore)" (Doc. 5734/1/82) will be resubmitted to the Safety and Health Commission once this document has been examined by the Working Party on Accident Statistics for its opinion.

During 1982, a restricted group drafted a document on the safety training of personnel working on oil rigs. This document will be submitted to the Safety and Health Commission in 1983.

The Working Party is kept posted on accidents during offshore drilling operations and thus received the results of the inquiry into the Alexander Kielland accident in the form of Report No 67 to the Storting of the Norwegian Ministry of Labour.

There was also information on an accident on a platform of the Newfoundland coast in Canadian waters on 15 February 1952. This accident claimed 84 lives.

Six persons lost their lives in a helicopter accident in the British sector on 14 September 1982. These transport accidents are worrying, for in this same sector, helicopter accidents claim as many lives as those which occur during drilling operations.

Moreover, in onshore operations, a blowout followed by a fire occurred in January 1982 at Hatfield Moor in Yorkshire. There were no casualties, but the group of experts was confronted with an unusual aspect in as much as the blowout occurred at a totally unexpected depth below ground.

A preliminary conclusion can be drawn from the above, viz. the need for precautions against blowouts even when drilling operations are carried out for purposes other than prospecting or extraction of hydrocarbons. Similarly, the equipment used must be well suited to the beds which must be drilled through, and the personnel involved must be adequately trained.

The Safety and Health Commission liaises with organizations which deal with health and safety problems in the oil and natural gas extractive industries. For instance, a member of the Secretariat sat in as an observer at the Conference on Safety Pollution Safeguards in the Development of N.W. European Offshore Resources held in Oslo on 10-13 May 1982.

The same person provides an interdepartmental liaison with the Directorate-General for the Environment, Consumer Protection and Nuclear Safety which is kept informed of drilling incidents likely to have repercussions on marine or land environment.

CHAPTER L

COMMITTEE OF EXPERTS ON THE USE OF
DIESEL ENGINES IN THE EXTRACTIVE INDUSTRIES

The Committee of Experts held one meeting on 24 September 1982 at which it was decided to forward to the Safety and Health Commission the proposal to national governments entitled "The use of diesel engines underground in the extractive industries" (Doc. 5509/11/80). The relevant texts were prepared by two restricted meetings.

The document examines the risks to health (due to pollutant emission from running engines), the risk of fire and the risk of explosion in environments susceptible to firedamp.

The proposals relate to the reduction of these risks during the operation of diesel-powered equipment underground. These engines power at least 1 900 locomotives and 160 tyred vehicles in coal-mines and approximately 650 locomotives and 4 200 tyred vehicles in other mines. There is a special section on the research topics which ought to be taken into consideration.

On 23 November 1982, the Safety and Health Commission acknowledged the value and significance of this work and approved the subject matter of the document, while at the same time expressing the hope that the proposals - which ultimately constitute the basis of national legislation - be reviewed and expressed more clearly.

PART III

COMMON ACCIDENT STATISTICS

1. Tables :

The following tables are to be found at the end of this chapter.

Table Ia giving the number of victims of accidents by cause, location and period of incapacity; table Ib is derived from this and shows the frequency rates which are obtained by dividing the total number of accidents by the number of manhours spent underground.

A table is provided for each country where there is a large underground coal mining industry.

Tables 2a and 2b are summary tables showing the long term trend of accident rates from all causes and from group accidents.¹

2. Total of accidents

A summary of the main changes as compared with 1981 has been given in chapter I of this report. It was noted that fatal accidents were down by 10 from 109 to 99 in 1982 and serious injuries were down by 592 to 53410 total accidents down by 8030 to 62504.

3. Examination of the frequency rates.

The following table shows the changes in the per capita risk as measured by the frequency of accidents per million man hours worked.

It can be seen that the reduction in frequency rates is less marked than the total number of accidents. This is due to a smaller number of hours worked consequent of the low level of demand.

¹ Group accidents are defined as those accidents which result in 5 or more persons in total being killed or seriously injured causing them to be absent from work for more than 56 days.

1982 Frequency

Rate for the five principal causes of accident

	Fatal Accident	56 days	21-56 days	4-20 days	TOTAL
ACCIDENTS per Mio. MANHOURS					
Falls	0.062	1.72	5.41	15.32	22.50
Transport	0.064	1.41	2.70	5.68	9.87
Slipping, falling stumbling	0.016	3.18	10.56	21.43	35.21
Machines, tools and supports	0.015	1.27	4.78	12.09	18.19
Falling Objects and other causes	0.023	2.13	7.03	18.90	28.04
TOTAL	0.180	9.71	30.48	73.42	113.81

**Changes in the Frequency of all accidents
occurring underground - 1977 to 1982**

YEAR	Fatal accident	56 days	21-56 days	4-20 days	TOTAL
ACCIDENTS PER MIO. MANHOURS					
1977	0.101	11.49	41.77	99.60	152.46
1978	0.248	11.60	39.99	98.97	150.82
1979	0.235	10.76	36.65	91.62	139.26
1980	0.250	9.89	34.07	87.02	131.22
1981	0.194	10.54	32.64	82.15	125.52
1982	0.180	9.71	30.48	73.42	113.81

Over the six years covered by this table the total frequency rate for all accidents has dropped consistently from 152.410 to 113.810. However the main part of this improvement has been concentrated in the 4-20 day and 21 - 56 day accidents whilst little reduction has been achieved in the risk of serious or fatal accident. Thus the improvement in the total number of these serious accidents has been largely due to a reduced level of production and improved productivity which has reduced the number of persons at risk.

4. Causes of accidents

In last years report it was shown that 90% of accidents occurred from five major causes.

This pattern was repeated in 1982. However the injuries from falls of ground and transport appear to be of a more serious nature, as shown by the fact that 34% and 35 % of fatalities occur in these two categories. This can be seen from the following summary table.

I. Falls of ground	20%	of the total accidents		
II. Transport	9%	"	"	"
III. Stumbling, falling or slipping	29%	"	"	"
IV. Machinery	17%	"	"	"
V. Falling objects	17%	"	"	"

The importance of stumbling, falling and slipping has already been remarked on, and it should be noted that of the total of accidents resulting in more than 56 days of absence, at least 30% arise from this single cause. One is bound to pose the question of what can be done to reduce the frequency of this type of accident. Greater emphasis in recent years on the elimination of long walking distances underground to and from work, by the installation of manriders should have reduced these accidents. But can such items as improved non-slip footwear, more attention to cleanliness and tidyness in roadways, better preparation of walking tracks, and better illumination in places where persons move about on foot, have an effect on the frequency of stumbling, falling and slipping accidents? Further documented research and perhaps safety campaigns seem to be required.

5. Group accidents

There was one group accident; this resulted from a fall of ground in France in a heading which caused two deaths and 5 serious injuries.

6. Long term trends

The long term trend remains positive both in total numbers of accidents and as measured by the reduction in the per capita risk of accident to all persons working, underground in coal mines, as shown by tables 3A or 3B. With the use of more massive support systems, falls of ground have become a reduced proportion of total accidents, and the main causes of these are now

either transport or movement of the victim about the mine. With the increasing weight of many items of plant, attention will be required to systems of handling heavy equipment, machines and tools.

7. Future developments in the collection of statistics

The figures available deal only with underground accidents in the coal mining sector. It is apparant that the Terms of Reference for the Safety and Health Commission extend to cover all the extractive industries and an initial step should be made to agree standardised forms for reporting accidents in the other sectors of these industries which are not presently covered.



COMMUNITY OF THE X

**SAFETY AND HEALTH COMMISSION
FOR THE MINING
AND OTHER EXTRACTIVE INDUSTRIES**

*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 Community X

YEAR 1982

MAN-HOURS WORKED (1) 548 628 420

Table 1a

SITE OF THE ACCIDENT	PRODUCTION FACES			HEADINGS EXCLUDING SHAFTS & STABLE-PITS			SHAFTS AND STABLE-PITS			OTHER PLACES			TOTAL OF ACCIDENTS			GROUP ACCIDENTS (2)												
	4-20 (3)	21-56 (3)	56 FATAL (3)	4-20 (3)	21-56 (3)	56 FATAL (3)	4-20 (3)	21-56 (3)	56 FATAL (3)	4-20 (3)	21-56 (3)	56 FATAL (3)	4-20 (3)	21-56 (3)	56 FATAL (3)													
PERIOD OF INCAPACITY	4586	1666	514	23	6789	2824	950	325	11	4110	65	16	4	0	85	928	335	98	0	1361	8403	2967	941	34	12345	7	2	9
CAUSES OF ACCIDENTS	606	315	178	9	1108	461	193	93	6	753	63	39	29	2	133	1989	944	476	18	3427	3119	1491	776	35	5421	0	2	2
1. FALLS OF GROUND AND ROCKS	128	93	73	5	299	96	45	23	1	165	1	0	1	0	2	159	62	47	2	270	384	200	144	8	736	0	0	0
2. TRANSPORT	478	222	105	4	809	365	148	70	5	588	62	39	28	2	131	1830	882	429	16	3157	2735	1291	632	27	4685	0	2	2
3. FALLS AND MOVEMENT OF THE VICTIM	3068	1745	501	1	5315	2414	1172	332	3	3921	233	148	55	2	438	6050	2740	862	5	9657	11765	5805	1750	11	19331	0	0	0
4. MACHINES, TOOLS & SUPPORTS	19	6	1	0	26	3	3	1	0	7	1	0	0	0	0	19	4	0	0	23	41	13	2	0	56	0	0	0
5. EXPLOSIVES	0	3	22	0	25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15	0	4	36	0	40	0	0	0
6. IGNITIONS OR EXPLOSIONS OF FIREBAMP AND COAL DUST	0	3	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7. OUTBURST OF GAS, DE-OXIGENATION, SUFFOCATION OR POISONING BY NAT.	0	3	0	0	3	4	0	0	0	4	0	0	0	0	0	3	3	0	0	6	7	6	0	0	13	0	0	0
8. GASES (CO, CH ₄ , CO ₂ , H ₂ S), TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9. a. Outburst of Gas	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10. b. De-oxygenation and Poisoning by natural gases	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11. 9. HEATINGS OR FIRES	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12. 10. TURNSHES	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13. 11. ELECTRICITY	3	6	0	1	10	1	3	0	0	6	0	0	0	0	0	7	7	1	0	15	13	16	1	1	31	0	0	0
14. 12. OTHER CAUSES	684	196	48	1	929	545	133	23	0	701	49	26	9	0	84	1933	618	133	3	2687	3711	973	213	4	4401	0	0	0
TOTAL	114556	6410	2024	39	23029	9804	3727	1172	26	14829	658	315	131	4	1108	15187	6307	2014	30	23538	40305	16759	5341	99	62504	7	4	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., one either died or were unable to resume work underground for at least eight weeks).
 (3) Calendar days.

ANNEX

Explanatory notes - Tables 1

GENERAL DEFINITIONS

1. Accident

Bodily injury resulting from a sudden and abnormal external cause in the course of work.

The Mines Safety and Health Commission's statistics should only cover victims of accidents underground, including accidents which occur when men enter and leave the cages and while the cages are in motion.

2. Fatal accident

An accident causing the death of the victim within 56 days following the accident. Victims dying more than 56 after the day of the accident should not be included in the fatal accident category but in that of accidents resulting in incapacity involving an absence from work of more than 56 days.

3. Persons covered by the statistics

Pit staff and employees of contractor firms who belong to a miners' social security scheme.

The statistics count victims and not accidents, everyone who is the victim of an accident while actually underground as well as during descent and ascent should be included. Victims can therefore only be miners, supervisors, engineers or staff belonging to contractor firms.

4. Shifts and number of hours worked

Shifts and number of hours worked by the persons on the books of the mine and other staff belonging to a miners' social insurance scheme; account should be taken both of extra shifts and overtime.

The period of reference adopted is the period of actual exposure to risk; one therefore counts extra shifts and overtime in terms of time actually worked and not of number of hours paid.

5. Accidents rates

Number of accidents per million hours worked.

The frequency rates are arrived at by dividing the number of accidents of a given category by the total number of hours spent on all types of work underground.

CAUSES OF ACCIDENTS

I. Falls of Ground and Rocks

This category of accidents covers falls of stone or coal from its natural situation

It does not cover accidents caused by falls of ground resulting from one of the factors included under another category, for example the use of explosives, explosion of firedamp or dust, or an outburst. Accidents caused by falls of stones in a covered waste should be included in this category; on the other hand, accidents during the stowing of waste should be classified in category 5 "Falls of Objects". Accidents caused by materials continuing to move after falling from their natural position are included under category I "Falls of ground and rocks", except where it is a case of materials set in motion by some external cause after first coming to rest.

II. Transport

Accidents caused by any means of transport whether stationary or in motion, used to carry men or objects at the face, in other workings, in roadways, in shafts, staple pits, etc., including accidents caused by the engines providing motive power for transport. This category includes, for example, accidents caused by lumps of coal falling from a conveyor belt or blocks of wood from a tub loaded with timber, and even those caused when lumps of coal are projected during their descent down a fixed chute. An accident caused by the gear wheels or the driving mechanism of a transport system should also be included in category II "Transport".

Electrocution caused by a trolley wire should be included in category XI "Electricity".

a) Continuous Transport

Transport equipment which can receive products along the whole of its length and maintain a continuous flow.

b) Discontinuous transport

All other means of transport.

This category should include accidents caused particularly by skips, cages, kibbles, as well as accidents involving men or objects falling from these cages, skips or kibbles, rope haulages, locomotives, monorails, dacking rams and other similar devices.

III. Falls and movement of the victim

a) While moving about the mine

Falls of men into a shaft or staple pit, falls in general, stumbles, slips, knocks and bumps, sprain of limbs, etc., whatever the cause, should be included, so long as the basic cause of the accident is the victim's movement through the mine in the course of or at the place of work and so means of transport is involved; the latter should be included in category II "Transport" or III b "Falls of victim during other activities" respectively.

b) In the course of other activities

Falls of men into a shaft or staple pit, falls in general, stumbles, slips, knocks and bumps, sprain of limbs, etc., as long as the fall was caused basically by some particular activity and not by the movement of the victim about the mine, which is covered in III a.

This category should only include accidents caused by the victim falling during his actual work and not during the course of moving about the mine as under category III a "Falls of victim while moving about the mine".

IV. Machines, tools and supports

a) Machines

Accidents caused by engines powering a means of transport should be included in category II "Transport". Category IV covers accidents occurring during the starting up and running of other machines.

Accidents caused by machines falling while being moved will be included in category V "Falls of objects".

b) Tools

Category IV covers accidents caused by the use of tools such as portable drills, drills on stands, hand saws, pneumatic picks, lifting gear, pushers, etc. Accidents caused by falling tools should be put into category V "Falls of objects".

c) Supports

With regard to accidents occurring during the handling of supports only those involving the setting up or removal of this equipment should be included in category IV. If a support or one of its components falls during transport, the accident should be included in category V "Falls of objects".

Category IV only covers accidents arising from the use and movement of machines, tools and equipment; it is emphasized in the case of supports that only accidents occurring during the setting up and removal of this equipment should be included in this category.

V. Falls of objects

Accidents involving the falling or dislodging of excavated material, and of objects such as frames, timber, tools, props, pipes, materials, etc.

This category includes not only accidents caused directly by falls of excavating material or objects, but also those caused by objects falling while being handled.

VI. Explosives

Accidents occurring during the transport or handling of explosives, the charging of shot-holes, accidental or premature firing of shots, inadequate protection of personnel, unfired explosives being hit by picks or drills, mis-fires, long fires, residues and poisoning by fumes from explosives.

Where the use of explosives sets off an explosion of fire-damp or dust or even a heating or a fire, the accident should be included in category VII or IX respectively.

VII. Ignitions or explosions of firedamp and coal dust

This includes poisoning or suffocation by the gases so produced. An explosion of firedamp or coal dust brought about by the use of electricity should be classified under category VII. As a general rule, if the causes of an accident include the ignition or explosion of firedamp or dust, it should always be included in category VII.

VIII. Outbursts of gas - Deoxygenation, suffocation or poisoning by natural gases (CO₂, CH₄, CO, H₂S)

a) Outbursts of gas

Accidents caused by ejected materials of roof falls caused by sudden outbursts of gas. In accordance with the Rule set out for category VII, if the outburst is followed by an explosion of firedamp, any accidents caused thereby should be included in category VII "Ignitions or explosions of firedamp or explosions of coal dust".

b) Deoxygenation and poisoning by natural gases (CO₂, CH₄, CO, H₂S)

This includes accidents caused by lack of oxygen, by suffocation (CH₄, CO₂) and by poisoning (CO, H₂S). If suffocation or poisoning is brought about by gas produced by explosives or by an explosion of firedamp or coal dust, or even by a heating or fire, the accident should be classified under those categories. If suffocation or poisoning is caused by exhaust fumes from diesel engines, the accidents should be included in category IV, "Explosives".

IX. Heatings or fires

This includes poisoning or suffocation by the gases produced, injuries from burns, roof falls, falls of objects, etc. following a heating or fire in the mine. A fire following an explosion of firedamp or coal dust should be this category.

In general, if the accident is due to several combined causes including a heating or a fire, it should always be included in category IX "Heatings or fires" unless one of the causes is the ignition or explosion of firedamp or coal dust; in this last case the accident would be included in category VII.

X. Intrusions

Accidents occurring when old workings are broken into or when dead ground is encountered. Injuries from projected material, falls of objects, falls of ground, drowning, etc.

XI. Electricity

Accidents caused by electricity - burns, shocks, electrocution. If electricity causes the accidental firing of explosives, an explosion of firedamp or coal dust or a heating or a fire, the resulting accident should be included in those categories in the following order of priority:

1. Explosion of firedamp or dust
2. A heating or fire
3. Explosives

XII. Other causes

This category covers accidents which cannot be classified under categories I to XI, that is to say, accidents of which it is not possible to establish the exact cause. This category may also be used to record accidents covered by compressed air.

SITE OF THE ACCIDENT

This means the place where the victim was at the time of the accident, which may be different from the victim's normal place of work.

1. Production faces

This comprises the working face including the part between the face or staple hole and the stowed or caved waste but does not include roads of any kind except dummy roads.

2. Headings excluding shafts and staple pits

This also covers the area where loading, timbering and steelwork are carried out immediately behind the face. In the case of slusher packing the cutting area extends up to and including the line of props.

Development headings should be considered as drifts.

3. Shafts and staple pits

This also covers the immediate approach to insets especially where mine cars and stores are loaded and unloaded from the cages.

4. Other places

This heading covers all the victims of accidents not included under the three preceding headings.

PERIOD OF INCAPACITY

Accidents should be broken down as follows according to periods of incapacity:

- Accidents involving an absence of between 4 and 20 calendar days
- Accidents involving an absence of between 21 and 56 calendar days
- Accidents involving an absence of more than 56 calendar days
- Fatal accidents.

The day of the accident does not count. The number of days of incapacity to be taken into consideration is defined by the effective absence of the miner from work.

SAFETY AND HEALTH COMMISSION
FOR THE MINING
AND OTHER EXTRACTIVE INDUSTRIES

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 2.

COUNTRY : Community X

(absolute figures)

YEAR : 1982

MAN-HOURS WORKED (1) 548 638 420

NATURE OF THE INJURY	AMPUTATIONS AND ENUCLEATIONS		FRACTURES WITH OR WITHOUT DISLOCATION		LUXATIONS TWIST AND SPRAINS		CONCUSSION AND INTERNAL INJURY		OPEN WOUNDS, CONTUSION AND MUSCULAR ABRASIONS		BURNS AND HARMFUL EFFECTS OF ELECTRICITY AND RADIATION		POISONING AND SUFFOCATION		MULTIPLES INJURIES: OF THOSE NOT SPECIFIED (2)		TOTAL												
	56 FATAL DAYS ACCI- (5) DENTS	TOTAL DAYS ACCI- (5) DENTS	56 FATAL DAYS ACCI- (5) DENTS	TOTAL DAYS ACCI- (5) DENTS	56 FATAL DAYS ACCI- (5) DENTS	TOTAL DAYS ACCI- (5) DENTS	56 FATAL DAYS ACCI- (5) DENTS	TOTAL DAYS ACCI- (5) DENTS	56 FATAL DAYS ACCI- (5) DENTS	TOTAL DAYS ACCI- (5) DENTS	56 FATAL DAYS ACCI- (5) DENTS	TOTAL DAYS ACCI- (5) DENTS	56 FATAL DAYS ACCI- (5) DENTS	TOTAL DAYS ACCI- (5) DENTS	56 FATAL DAYS ACCI- (5) DENTS	TOTAL DAYS ACCI- (5) DENTS													
I. Head and neck	3	0	3	81	13	0	13	15	3	18	121	5	126	1	0	1	1	3	2	5	3269	893	214	34	4415				
II. Eyes	2	0	2	0	0	0	0	1	0	1	70	0	70	5	0	5	0	0	0	0	8	0	8	0	876				
III. Trunk	0	0	0	180	5	185	195	16	1	17	178	5	183	4	0	4	0	0	0	0	7	4	11	5584	2337	580	16	8517	
IV. Upper limbs (excluding hands)(3)	4	0	4	241	0	241	55	0	55	0	193	0	193	6	0	6	0	0	0	0	1	0	1	3682	1283	500	0	5465	
V. Hands	124	1	125	746	0	746	49	0	49	0	546	0	546	5	0	5	0	0	0	0	5	0	5	9033	5931	1475	1	16440	
VI. Lower limbs (excluding feet)(4)	9	0	9	510	1	511	309	0	309	0	516	0	516	6	0	6	0	0	0	0	4	0	4	5824	2656	1354	1	9935	
VII. Feet	16	0	16	403	0	403	153	0	153	0	261	0	261	2	0	2	0	0	0	0	8	0	8	3013	1873	843	0	5729	
VIII. Multiple locations	3	1	4	56	9	65	13	0	13	11	12	9	131	35	0	35	0	0	0	0	2	7	9	992	554	242	27	1815	
IX. Not specified	0	1	1	7	0	7	19	0	19	0	15	0	15	6	0	6	0	2	2	1	5	15	20	540	163	52	18	773	
TOTAL	161	3	164	2201	38	2239	806	1	807	43	5	48	12022	19	2041	70	0	70	0	3	3	43	28	71	33564	15903	5346	97	54910

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

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

(3) The hips and the ankles are included under "lower limbs"

(4) Calendar days

ANNEX

Explanatory notes - Tables 2

GENERAL DEFINITIONS

1. Accident

Bodily injury resulting from a sudden and abnormal external cause in the course of work.

The Mine Safety and Health Commission's statistics should only cover victims of accidents underground, including accidents which occur when men enter and leave the cages and while the cages are in motion.

2. Fatal accident

An accident causing the death of the victim within 56 days following the accident. Victims dying more than 56 days after the day of the accident should not be included in the fatal accidents category but in that of accidents resulting in incapacity involving an absence from work of more than 56 days.

3. Persons covered by the statistics

Pit staff and employees of contractor firms who belong to a miner's social security scheme.

The statistics count victims and not accidents; everyone who is the victim of an accident while actually underground as well as during descent and ascent should be included. Victims can therefore only be miners, supervisors, engineers or staff belonging to contractor firms.

4. Shifts and number of hours worked

Shifts and number of hours worked by the persons on the books of the mine and other staff belonging to a miners' social insurance scheme; account should be taken both of extra shifts and overtime.

The period of reference adopted is the period of actual exposure to risk; extra shifts and overtime must therefore be counted in terms of time actually worked and not of number of hours paid.

5. Accident rates

Number of accidents per million hours worked.

The frequency rates are arrived at by dividing the number of accidents of a given category by the total number of hours spent on all types of work underground.

9. Location of the injury

When an accident has resulted in multiple injuries to different parts of the body and one of the injuries is clearly more serious than the others, this accident should be classified in the group relating to the part of the body most seriously injured; for example, a fracture of the leg, together with grazing of a hand, should be classified in category VI "Lower limbs" and not in category V "Hands".

I. Head and neck

Covers in particular the skull, the scalp, brain injuries, the ears, the mouth (including the lips, teeth and tongue), the nose, the face, the neck but not the eyes which are included in category II.

II. Eyes

Also covers the eye socket and the optic nerve.

III. Trunk

Covers the back (vertebrae and adjacent muscles, the spinal marrow), the thorax (ribs, sternum, bronchi, lungs), the abdomen (including internal organs, kidneys, liver, spleen), the abdomen and the genital organs.

The shoulders and wrists are regarded as part of the upper limbs (category IV) and not of the trunk or hands (category V).

The hips and the ankles are regarded as part of the lower limbs (category VI) and not as part of the trunk or feet (category VII).

IV. Upper limbs (excluding the hands)

This includes injuries to the shoulders, including the collar bone and shoulder blades, injuries to the arms, elbows, forearms and wrists.

V. Hands

The wrists are not regarded as part of the hands but of the upper limbs (category IV).

VI. Lower limbs (excluding feet)

This includes the hips, thighs, knees, legs and ankles.

VII. Feet

The ankles are not regarded as part of the feet but of the lower limbs (category VI).

VIII. Multiple locations

This group, covering multiple locations, should only be used when the victim has suffered several injuries to different parts of his body, none of which is clearly more serious than the others.

The category may cover injuries to the head and trunk, the head and one or more limbs, the trunk and one or more limbs or an upper and a lower limb.

IX. Not specified

This group should only be used when there is no evidence of the exact location of the injury.

10. Nature of the injury

When an accident has resulted in several injuries to different parts of the body and one of them is clearly more serious than the others, the accident should be classified in the group relating to the most serious injury.

1. Amputations and enucleations

This includes traumatic avulsion of the eye.

2. Fractures with or without dislocation

This includes simple fractures; fractures with injuries to the soft parts of the body, closed or compound fractures; fractures with internal or nerve damage, fractures with luxations, contusions and crushings.

3. Luxations, twists and sprains

LUXATIONS

This covers minor luxations and dislocations, traumatic lumbago, lumbago sciatica caused by strain; it does not include luxations with fracture covered by category 2.

TWISTS AND SPRAINS

This covers ruptures, torn and lacerated muscles, tendons, ligaments and joints as well as hernia due to strain and slipped discs, except when they are associated with open wounds.

4. Concussion and internal injury

This category includes internal bruising, internal bleeding, internal lacerations and ruptures except where associated with fractures.

It does not include internal injuries accompanied by fractures which are covered by category 2.

5. Open wounds, contusions and muscular abrasions

This covers lacerations, flesh wounds, cuts, contusions, scalp wounds, loss of a nail or an ear, wounds with nerve injuries, haemarthrosis, haematoma and bruises, contusions and bruises with superficial wounds. It does not include traumatic amputation, enucleations or avulsion of an eye, which are covered by category 1, compound fractures, contusions and crushings accompanying a fracture which are covered by category 2, concussion covered by 4, burns with wounds covered by 6.

6. Burns and harmful effects of electricity and radiation

Covers burns from fire, boiling liquid, friction, chemical substances (external burns only), burns with wounds, electrocution, electric shock and burns caused by electricity, the effect of X-rays, radioactive substances, ultra violet rays and ionising radiation.

It does not cover burns caused by the absorption of a corrosive or caustic substance which are classified in category 7.

7. Poisoning and suffocation

This category covers the effects of the injection, ingestion, absorption or inhalation of toxic, corrosive or caustic substances.

Asphyxiation or suffocation by compression or roof fall; asphyxiation due to the suppression or reduction of oxygen in the atmosphere, the entry of a foreign bodies into the respiratory system, to carbon monoxide or other toxic gases.

8. Multiple injuries or those not specified (including complications)

This category includes those cases in which the victim has suffered several injuries of different types, none of which is clearly more serious than the others, and those which are not covered in any other category.

It also covers the various early complications of injuries and pathological reactions, which, however, should only be classified in this group when the nature of the original injury is not known.

PERIOD OF INCAPACITY

Accidents should be broken down according to two periods of incapacity :

- accidents involving an absence of more than 56 calendar days
- fatal accidents.

The day of the accident does not count. The number of days of incapacity to be taken into consideration is defined by the effective absence of the miner from work.

C. COMPARATIVE TABLE OF UNDERGROUND GROUP ACCIDENTS (1) FOR
THE COMMUNITY OF SIX
ANNEES 1960 to 1981

YEAR	NUMBER OF ACCIDENTS	CAUSE	INJURED	DEATHS
1960	2	Falls of ground	2	10
1961	1	Falls of ground	0	7
1962	3	Falls of ground	3	18
	3	Firedamp and dust explosions	62	338
1963	-	-	-	-
1964	2	Transport	5	14
1965	3	Firedamp and dust explosions	4	41
1966	3	Firedamp and dust explosions	11	21
1967	-	-	-	-
1968	1	Firedamp and dust explosions	0	17
1969	1	Falls of ground	0	6
	1	Movement of personnel	0	5
1970	1	Firedamp and dust explosions	11	16
1971	2	Falls of ground	0	12
	1	Gas outbursts, suffocation by natural gases	1	8
1972	-	-	-	-
1973	2	Falls of ground	-	9
1974	1	Falls of ground	1	5
	1	Firedamp and dust explosions	5	42
1975	-	-	-	-
1976	1	Firedamp and dust explosions	0	16
1977	1	Fires and spontaneous combustion	7	7
1978	1	Transport	3	7
1979	1	Falls of ground	0	5
	2	Firedamp and dust explosions	2	17
1980	1	Firedamp and dust explosions	16	2
1981	1	Gas outbursts of firedamp	7	8
1982	1	Falls of ground	5	2

(1) Group accidents: accidents involving more than five persons killed or incapacitated for work for longer than 56 days.

D. SUMMARY TABLE

1. COMMUNITY OF SIX

Years 1958 - 1975

Year	Production in thousands of tonnes (1)	Under-ground o.m.s. in kg/hour	Million hours worked	Number of deaths	No of serious injuries (2)(more than 8 weeks)	No of deaths per million tonnes	No of serious injuries (2) per million tonnes	No of deaths per million hours	No of serious injuries per million hours
1958	252 278	200	1 260	770	17 074	3,052	67,68	0,610	13,551
1959	240 602	214	1 122	622	14 539	2,585	60,43	0,590	12,950
1960	239 967	231	1 037	526	13 459	2,192	56,09	0,507	12,986
1961	235 848	245	962	527	12 720	2,235	53,93	0,548	13,227
1962	233 233	259	901	840 (3)	12 418	3,602 (3)	53,24	0,932(3)	13,781
				541 (4)		2,320 (4)		0,600(4)	
1963	229 769	270	849	465	11 686	2,024	50,86	0,547	13,761
1964	235 007	279	841	411	11 726	1,749	49,89	0,493	13,860
1965	224 249	286	784	410	10 595	1,828	47,25	0,522	13,506
1966	210 189	301	698	374	9 247	1,779	43,99	0,536	13,242
1967	189,484	322	587	269	7 781	1,420	41,06	0,457	13,246
1968	181 016	346	522	240	7 501	1,326	41,44	0,460	14,370
1969	176 749	371	476	209	7 222	1,181	40,82	0,438	15,160
1970	170 355	388	438	188	6 591	1,104	38,69	0,429	15,047
1971	164 910	398	414	182	6 249	1,104	37,89	0,440	15,088
1972	151 809	411	369	147	5 763	1,033	26,34	0,399	15,60
1973	139 700	421	332	137	5 560	0,981	39,80	0,413	16,77
1974	133 300	426	313	143	5 054	1,073	37,91	0,456	16,12
1975	129 100	405	319	110	4 795	0,852	37,14	0,35	15,05

- (1) net output including slurry and dust.
- (2) persons incapacitated for more than 56 days.
- (3) including the Luisenthal explosion.
- (4) excluding the Luisenthal explosion.

2. UNITED KINGDOM

Years 1973 - 1975

1973	130 200	425	306	74	490	0,568	3,76	0,242	1,60
1974	109 200	407	268	37	417	0,339	3,82	0,138	1,555
1975	127 700	421	303	55	522	0,431	4,09	0,181	1,722

Important note : The figures for serious injuries in these two tables cannot be compared as the corresponding definition in the U.K. differed from that used in the Community for the years 1973 to 1975. From 1976 onwards, all figures are based on the same definition and are given in table D3 which covers the Community of Nine.

3. COMMUNITY OF MINE
Years 1976 - 1982

Year	Production in thou- sands of tonnes (1)	Under- ground o.m.s. in kg/hour	Million hours worked	Number of deaths	No of serious injuries (2)(more than 8 weeks)	No of deaths per million tonnes	No of serious injuries (2) per million tonnes	No of deaths per mil- lion hours	No of serious injuries per million hours
1976	247 700	421	588	170	6 898	0,686	27,85	0,289	11,73
1977	246 770	427	578	116	6 637	0,470	26,90	0,201	11,48
1978	238 078	427	557	138	6 472	0,580	27,18	0,248	11,62
1979	238 608	428	557	131	5 992	0,549	25,11	0,235	10,76
1980	247 090	437	565	141	5 583	0,571	22,60	0,250	9,88
1981	245 652	434	562	109	5 922	0,444	24,11	0,194	10,54
1982	241 258	439	562	99	5 430	0,410	22,48	0,180	9,66

UNITED KINGDOM



8. COMPARATIVE TABLE OF UNDERGROUND FATALITIES

FREQUENCY RATES

Years 1958 to 1982

	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973
UNITED KINGDOM																
1) Falls of ground																
2) Haulage and transport																
3) Movement of personnel																
4) Machinery, handling of tools and supports																
5) Falling objects																
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																
12) Other causes																
TOTAL																

Not available following the system of classification used in the Community of the VI

	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
UNITED KINGDOM																
1) Falls of ground				0,02	0,03	0,01	0,03	0,01	0,02							
2) Haulage and transport				0,07	0,12	0,06	0,06	0,05	0,07							
3) Movement of personnel				-	-	-	-	0,01	0,00							
4) Machinery, handling of tools and supports				-	-	-	-	0,00	0,01							
5) Falling objects				-	-	0,01	-	-	-							
6) Explosives				-	-	-	-	-	-							
7) Explosions of firedamp or coal dust				-	-	0,03	-	-	-							
8) Sudden outbursts of firedamp, suffocation by natural gases				-	-	-	-	-	-							
9) Underground combustion and fires				-	-	-	-	-	-							
10) Inrushes of water				-	-	-	-	-	-							
11) Electricity				-	-	-	-	-	-							
12) Other causes				-	-	-	-	-	0,01							
TOTAL				0,09	0,15	0,11	0,09	0,07	0,11							

SAFETY AND HEALTH COMMISSION
FOR THE MINING
AND OTHER EXTRACTIVE INDUSTRIES

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

YEAR 1982

MAN-HOURS WORKED (1) 279 286 876

Table 1a

SITE OF THE ACCIDENT	PRODUCTION FACES			HEADINGS EXCLUDING SHAFTS & STAPLE-PITS			SHAFTS AND STAPLE-PITS			OTHER PLACES			TOTAL OF ACCIDENTS			GROUP ACCIDENTS (2)											
	4-20 DAYS (3)	21-56 DAYS (3)	56 FATAL DAYS (3)	4-20 DAYS (3)	21-56 DAYS (3)	56 FATAL DAYS (3)	4-20 DAYS (3)	21-56 DAYS (3)	56 FATAL DAYS (3)	4-20 DAYS (3)	21-56 DAYS (3)	56 FATAL DAYS (3)	4-20 DAYS (3)	21-56 DAYS (3)	56 FATAL DAYS (3)												
PERIOD OF INCAPACITY	4	1615	4	419	119	47	2	587	0	0	0	0	405	141	34	0	580	1966	632	178	6	2782	0	0	0		
CAUSES OF ACCIDENTS	387	154	62	5	608	150	67	36	3	256	1	2165	1408	540	206	11	2165	1950	764	304	19	3037	0	0	0		
1. FALLS OF GROUND AND ROCKS	24	20	15	1	60	13	11	8	1	33	0	150	96	39	13	2	150	133	70	36	4	243	0	0	0		
2. TRANSPORT, TOTAL	363	134	47	4	548	137	56	28	2	223	0	8	1312	501	193	9	2015	1817	694	268	15	2794	0	0	0		
a. Continuous Transport	114	114	33	0	558	460	147	29	0	636	0	0	3248	1099	262	1	4610	4119	1360	324	1	5804	0	0	0		
b. Discontinuous Transport	110	38	9	0	157	132	54	4	0	190	0	0	1636	570	140	0	2346	1878	662	153	0	2693	0	0	0		
3. FALLS AND MOVEMENT OF THE VICTIM	301	76	24	0	401	328	93	25	0	446	0	0	1612	529	122	1	2264	2241	698	171	1	3111	0	0	0		
a. While moving about the mine	792	273	82	0	1127	363	96	18	1	478	8	1	10	1075	311	63	1	1450	2238	681	144	2	3065	0	0	0	
b. In the course of other activities	147	54	12	0	213	42	6	0	0	48	1	0	85	27	7	0	119	275	87	19	0	381	0	0	0		
4. MACHINES, TOOLS & SUPPORTS	64	24	3	0	91	38	11	2	1	52	2	1	302	87	16	0	405	406	122	21	1	550	0	0	0		
a. Machines	581	195	47	0	823	283	79	16	0	378	5	1	7	688	197	40	1	926	1557	472	104	1	2134	0	0	0	
b. Tools	565	195	42	0	802	219	79	15	0	313	2	1	743	301	59	0	1103	1529	576	116	0	2221	0	0	0		
c. Supports	19	6	0	0	25	3	0	0	0	3	0	0	18	4	0	0	22	40	10	0	0	50	0	0	0		
5. FALLS OF OBJECTS	0	3	22	0	25	0	0	0	0	0	0	0	0	1	14	0	15	0	4	36	0	40	0	0	0		
6. EXPLOSIVES	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
7. IGNITIONS OR EXPLOSIONS OF FIREDAMP AND COAL DUST	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
8. OUTBURST OF GAS, DE-OXIDATION, SUFFOCATION OR POISONING BY NAT. GASES (CO ₂ , CH ₄ , CO, H ₂ S), TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
a. Outburst of Gas	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
b. De-oxygenation and Poisoning by natural gases	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
9. HEATINGS OR FIRES	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
10. INRUSHES	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
11. ELECTRICITY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
12. OTHER CAUSES	419	118	26	0	563	327	73	14	0	414	15	14	6	0	35	1638	538	106	2	2284	2399	743	152	2	3296	0	0
TOTAL	3735	1235	344	9	5323	1941	581	159	6	2687	30	19	7	0	56	8538	2962	744	15	12239	14244	4777	1254	30	20305	0	0

(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.

Table 1b

DETAILED BREAKDOWN OF ACCIDENT VICTIMS ACCORDING TO CAUSE AND SITE OF ACCIDENT AND PERIOD OF INCAPACITY
(frequency rates)

SAFETY AND HEALTH COMMISSION
FOR THE MINING
AND OTHER EXTRACTIVE INDUSTRIES
Common Statistics on victims
of accidents underground in coal mines

YEAR 1982

COUNTRY United Kingdom

MAN-HOURS WORKED (1) 279 286 876

SITE OF THE ACCIDENT	PRODUCTION FACES			HEADINGS EXCLUDING SHAFTS & STAPLE-PITS			SHAFTS AND STAPLE-PITS			OTHER PLACES			TOTAL OF ACCIDENTS			UNDERGROUND			GROUP ACCIDENTS (2)									
	1			2			3			4			5			6			7									
	4-20	21-56	56 FATAL	4-20	21-56	56 FATAL	4-20	21-56	56 FATAL	4-20	21-56	56 FATAL	4-20	21-56	56 FATAL	4-20	21-56	56 FATAL	4-20	21-56	56 FATAL	4-20	21-56	56 FATAL	4-20	21-56	56 FATAL	
PERIOD OF INCAPACITY	DAYS	DAYS	ACCI- TOTAL	DAYS	DAYS	ACCI- TOTAL	DAYS	DAYS	ACCI- TOTAL	DAYS	DAYS	ACCI- TOTAL	DAYS	DAYS	ACCI- TOTAL	DAYS	DAYS	ACCI- TOTAL	DAYS	DAYS	ACCI- TOTAL	DAYS	DAYS	ACCI- TOTAL	DAYS	DAYS	ACCI- TOTAL	
CAUSES OF ACCIDENTS	(3)	(3)	(3) DENIS	(3)	(3)	(3) DENIS	(3)	(3)	(3) DENIS	(3)	(3)	(3) DENIS	(3)	(3)	(3) DENIS	(3)	(3)	(3) DENIS	(3)	(3)	(3) DENIS	(3)	(3)	(3) DENIS	(3)	(3)	(3) DENIS	
1. FALLS OF GROUND AND ROCKS	4.1	1.3	0.3	0.0	5.8	1.5	0.4	0.2	0.0	2.1	0.0	0.0	0.0	0.0	1.5	0.5	0.1	0.0	2.1	7.0	2.3	0.6	0.0	10.0				
2. TRANSPORT, TOTAL	1.4	0.6	0.2	0.0	2.2	0.5	0.2	0.1	0.0	0.9	0.0	0.0	0.0	0.0	5.0	1.9	0.7	0.0	7.8	7.0	2.7	1.1	0.1	10.9				
a. Continuous Transport	0.1	0.1	0.1	0.0	0.2	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.3	0.1	0.0	0.0	0.5	0.5	0.3	0.1	0.0	0.9				
b. Discontinuous Transport	1.3	0.5	0.2	0.0	2.0	0.5	0.2	0.1	0.0	0.8	0.0	0.0	0.0	0.0	4.7	1.8	0.7	0.0	7.2	6.5	2.5	1.0	0.1	10.0				
3. FALLS AND MOVEMENT OF THE VICTIM																												
TOTAL	1.5	0.4	0.1	0.0	2.0	1.6	0.5	0.1	0.0	2.3	0.0	0.0	0.0	0.0	11.6	3.9	0.9	0.0	16.5	14.7	4.9	1.2	0.0	20.8				
a. While moving about the mine	0.4	0.1	0.0	0.0	0.6	0.5	0.2	0.0	0.0	0.7	0.0	0.0	0.0	0.0	5.9	2.0	0.5	0.0	8.4	6.7	2.4	0.5	0.0	9.6				
b. In the course of other activities	1.1	0.3	0.1	0.0	1.4	1.2	0.3	0.1	0.0	1.6	0.0	0.0	0.0	0.0	5.8	1.9	0.4	0.0	8.1	8.0	2.5	0.6	0.0	11.1				
4. MACHINES, TOOLS & SUPPORTS,																												
TOTAL	2.8	1.0	0.2	0.0	4.0	1.3	0.3	0.1	0.0	1.7	0.0	0.0	0.0	0.0	3.8	1.1	0.2	0.0	5.2	8.0	2.4	0.5	0.0	11.0				
a. Machines	0.5	0.2	0.0	0.0	0.8	0.2	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.3	0.1	0.0	0.0	0.4	1.0	0.3	0.1	0.0	1.4				
b. Tools	0.2	0.1	0.0	0.0	0.3	0.1	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	1.1	0.3	0.1	0.0	1.5	1.5	0.4	0.1	0.0	7.0				
c. Supports	2.1	0.7	0.2	0.0	2.9	1.0	0.3	0.1	0.0	1.4	0.0	0.0	0.0	0.0	2.5	0.7	0.1	0.0	3.3	5.6	1.7	0.4	0.0	7.6				
5. FALLS OF OBJECTS	2.0	0.7	0.2	0.0	2.9	0.8	0.3	0.1	0.0	1.1	0.0	0.0	0.0	0.0	2.7	1.1	0.2	0.0	3.9	5.5	2.1	0.4	0.0	8.0				
6. EXPLOSIVES	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.2				
7. IGNITIONS OR EXPLOSIONS OF FIREDAMP AND COAL DUST																												
8. OUTBURST OF GAS, DE-OXYGENATION, SUFFOCATION OR POISONING BY NAT. GASES (CO ₂ , CH ₄ , CO, H ₂ S), TOTAL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
a. Outbursts of Gas	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
b. De-oxygenation and Poisoning by natural Gases	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
9. HEATINGS OR FIRES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
10. INMURSHES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
11. ELECTRICITY	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
12. OTHER CAUSES	1.5	0.4	0.1	0.0	2.0	1.2	0.3	0.1	0.0	1.5	0.1	0.1	0.0	0.1	5.9	1.9	0.4	0.0	8.2	8.6	2.7	0.5	0.0	11.8				
TOTAL	13.4	4.4	1.2	0.0	19.1	6.9	2.1	0.6	0.0	9.6	0.1	0.1	0.0	0.2	30.6	10.5	2.7	0.1	43.8	51.0	17.1	4.5	0.1	72.7				

(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.

SAFETY AND HEALTH COMMISSION
FOR THE MINING
AND OTHER EXTRACTIVE INDUSTRIES

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)

Table 2

YEAR : 1982

COUNTRY United Kingdom

MAN-HOURS WORKED (1) 279 286 876

uk2

uk2

NATURE OF THE INJURY	AMPUTATIONS AND ENUCLEATIONS		FRACTURES WITH OR WITHOUT DISLOCATION		LUXATIONS TWIST AND SPRAINS		CONCUSSION AND INTERNAL INJURY		OPEN WOUNDS, CONFUSION AND MUSCULAR ABRASIONS		BURNS AND HARMFUL EFFECTS OF ELECTRICITY AND RADIATION		POISONING AND SUFFOCATION		MULTIPLES INJURIES OF THOSE NOT SPECIFIED (2)		TOTAL		
	56 FATAL DAYS ACCI- (5) DENIS	TOTAL	56 FATAL DAYS ACCI- (5) DENIS	TOTAL	56 FATAL DAYS ACCI- (5) DENIS	TOTAL	56 FATAL DAYS ACCI- (5) DENIS	TOTAL	56 FATAL DAYS ACCI- (5) DENIS	TOTAL	56 FATAL DAYS ACCI- (5) DENIS	TOTAL	56 FATAL DAYS ACCI- (5) DENIS	TOTAL	4 - 20 DAYS ACCI- (5) DENIS	21 - 56 DAYS ACCI- (5) DENIS		TOTAL	
I. PERIOD OF INCAPACITY	1	56 FATAL DAYS ACCI- (5) DENIS	2	56 FATAL DAYS ACCI- (5) DENIS	3	56 FATAL DAYS ACCI- (5) DENIS	4	56 FATAL DAYS ACCI- (5) DENIS	5	56 FATAL DAYS ACCI- (5) DENIS	6	56 FATAL DAYS ACCI- (5) DENIS	7	56 FATAL DAYS ACCI- (5) DENIS	8	56 FATAL DAYS ACCI- (5) DENIS	9	56 FATAL DAYS ACCI- (5) DENIS	
II. LOCATION OF THE INJURY																			
I. Head and neck	0	8	4	10	10	0	23	1	24	0	0	0	1	2	2	900	157	41	8 1106
II. Eyes	1	0	0	0	0	0	12	0	12	0	0	0	0	7	461	86	20	0	567
III. Trunk	0	24	24	163	163	0	45	45	42	0	0	0	0	1	3384	995	232	1	4612
IV. Upper limbs (excluding hands)(3)	0	37	37	20	20	0	42	42	42	0	0	0	0	0	1034	319	99	0	1452
V. Hands	28	1	29	48	6	0	166	166	166	1	1	0	0	0	3132	1397	249	1	4779
VI. Lower limbs (excluding feet)(4)	0	148	148	109	109	0	119	119	119	2	2	0	0	0	3349	1055	378	0	4782
VII. Feet	2	2	29	2	2	0	50	50	50	1	1	0	0	0	987	393	84	0	1464
VIII. Multiple locations	1	1	14	11	11	0	42	44	35	35	35	0	1	2	466	220	105	4	795
IX. Not specified	1	1	7	19	19	0	13	13	13	6	6	0	1	15	531	155	46	16	748
TOTAL	32	34	315	5 320	339	1 340	0	512	3 515	45	0 45	0	1	11 18	29	14244	4777	1254	30 20305

(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



GERMANY



A. COMPARATIVE TABLE OF THE NUMBER OF PERSONS INCAPACITATED BY ACCIDENTS FOR LONGER THAN 56 DAYS

FREQUENCY RATES

Years 1958 to 1982

	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973
GERMANY																
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
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
3) Movement of personnel	2,497	2,463	2,348	2,512	2,808	2,646	2,744	3,032	2,852	2,974	3,300	3,399	3,370	3,246	3,48	3,98
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
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
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	-	-	-
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
TOTAL	13,721	14,007	13,819	14,109	14,539	14,498	14,999	15,133	14,598	14,599	15,540	16,096	15,798	14,866	15,33	16,175

	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
GERMANY																
1) Falls of ground	4,08	3,69	3,47	3,67	3,48	3,51	2,99	3,15	2,61							
2) Haulage and transport	1,68	2,16	1,89	1,74	1,77	1,71	1,72	1,62	1,56							
3) Movement of personnel	4,15	3,37	3,58	4,08	4,17	4,63	4,49	5,09	4,95							
4) Machinery, handling of tools and supports	1,58	2,16	1,85	2,09	1,90	1,85	1,67	1,78	1,67							
5) Falling objects	3,37	2,97	2,92	3,03	3,34	3,54	3,38	3,35	3,23							
6) Explosives	0,01	-	0,01	-	-	0,01	0,00	0,00	-							
7) Explosions of firedamp or coal dust	-	-	0,02	-	-	0,01	0,08	-	-							
8) Sudden outbursts of firedamp, suffocation by natural gases	-	-	-	-	-	-	-	-	-							
9) Underground combustion and fires	-	-	-	-	-	-	-	-	-							
10) Inrushes of water	-	0,009	0,01	0,01	0,01	0,07	0,01	0,01	-							
11) Electricity	0,52	0,32	0,40	0,36	0,20	0,56	0,13	0,16	0,08							
12) Other causes	15,39	14,679	14,15	14,99	14,87	15,89	14,47	15,16	14,10							
TOTAL	15,39	14,679	14,15	14,99	14,87	15,89	14,47	15,16	14,10							

B. COMPARATIVE TABLE OF UNDERGROUND FATALITIES

FREQUENCY RATES

Years 1958 to 1982

GERMANY	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973
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
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
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
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
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
6) Explosives	0,009	0,003	0,003	-	0,004	0,000	0,002	-	-	-	0,004	-	-	-	-	-
7) Explosions of firedamp or coal dusts	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	0,000	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	0,000	0,003	0,004	0,004	0,004	0,000	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
TOTAL	0,688	0,681	0,611	0,650	1,322	0,657	0,687	0,582	0,629	0,542	0,509	0,504	0,408	0,460	0,458	0,410

GERMANY	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
1) falls of ground	0,12	0,12	0,06	0,07	0,13	0,08	0,09	0,05	0,10	-	-	-	-	-	-	-
2) Haulage and transport	0,07	0,12	0,10	0,09	0,14	0,11	0,13	0,13	0,05	-	-	-	-	-	-	-
3) Movement of personnel	0,06	0,06	0,07	0,05	0,05	0,07	0,05	0,04	0,03	-	-	-	-	-	-	-
4) Machinery, handling of tools and supports	0,02	0,05	0,03	0,04	0,04	0,03	0,04	-	0,02	-	-	-	-	-	-	-
5) Falling objects	0,04	0,05	0,05	0,02	0,03	0,05	0,05	0,02	0,01	-	-	-	-	-	-	-
6) Explosives	-	-	0,005	-	-	-	-	-	-	-	-	-	-	-	-	-
7) Explosions of firedamp or coal dust	-	-	0,01	-	-	0,04	0,01	-	-	-	-	-	-	-	-	-
8) Sudden outbursts of firedamp, suffocation by natural gases	-	-	0,01	-	-	-	-	0,03	-	-	-	-	-	-	-	-
9) Underground combustion and fires	-	-	-	0,04	-	-	-	-	-	-	-	-	-	-	-	-
10) Inrushes of water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11) Electricity	-	-	0,005	0,01	-	-	0,01	-	0,01	-	-	-	-	-	-	-
12) Other causes	0,03	0,005	0,03	0,02	0,01	0,01	0,02	0,04	0,01	-	-	-	-	-	-	-
TOTAL	0,34	0,405	0,370	0,34	0,40	0,39	0,40	0,31	0,23	-	-	-	-	-	-	-

**SAFETY AND HEALTH COMMISSION
FOR THE MINING
AND OTHER EXTRACTIVE INDUSTRIES**

*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

YEAR 1982
MAN-HOURS WORKED (1) 198 588 045

COUNTRY Federal Republic of Germany

SITE OF THE ACCIDENT	PRODUCTION FACES			HEADINGS EXCLUDING SHAFTS & STABLE-PITS			SHAFTS AND STABLE-PITS			OTHER PLACES			TOTAL OF ACCIDENTS			GROUP ACCIDENTS (2)															
	4-20 DAYS	21-56 DAYS	56 FATAL	4-20 DAYS	21-56 DAYS	56 FATAL	4-20 DAYS	21-56 DAYS	56 FATAL	4-20 DAYS	21-56 DAYS	56 FATAL	4-20 DAYS	21-56 DAYS	56 FATAL																
	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)														
PERIOD OF INCAPACITY	1117	699	255	14	2085	14	1109	602	218	6	1935	23	10	4	0	37	223	99	41	0	363	2472	1410	518	20	4420	0	0	0		
CAUSES OF ACCIDENTS	110	107	98	2	315	2	65	47	24	1	137	15	16	15	1	47	213	204	175	5	597	403	374	310	9	1096	0	0	0		
1. FALLS OF GROUND AND ROCKS	50	45	48	2	145	2	17	11	10	0	38	1	0	1	0	2	27	13	26	0	66	95	89	85	2	251	0	0	0		
2. TRANSPORT	60	62	48	0	170	0	48	36	14	1	99	14	16	14	1	45	186	191	149	5	531	308	305	225	7	845	0	0	0		
3. FALLS AND MOVEMENT OF THE VICTIM	1828	1128	334	1	3091	1	1083	736	228	1	2048	107	121	40	1	269	1539	965	382	3	2409	4357	2970	984	6	8317	0	0	0		
a. While moving about the mine	0	0	0	0	0	0	0	0	0	0	0	3	1	1	0	5	0	0	0	0	3	1	1	0	5	0	0	0	0		
b. In the course of other activities	1828	1128	334	1	3091	1	1083	736	228	1	2048	104	120	39	1	264	1539	965	382	3	2409	4354	2969	983	6	8312	0	0	0		
4. MACHINES, TOOLS & SUPPORTS,	636	460	151	1	1248	1	520	300	123	2	945	19	13	8	0	40	397	194	49	1	641	1572	967	331	4	2874	0	0	0		
a. Machines	142	100	47	1	280	1	76	60	47	1	184	5	2	5	0	12	67	56	20	1	144	280	218	119	3	630	0	0	0		
b. Tools	241	140	28	0	409	0	259	105	32	1	397	14	9	3	0	26	260	108	17	0	385	774	382	80	1	1217	0	0	0		
c. Supports	253	220	76	0	549	0	185	135	44	0	364	0	2	0	0	2	70	30	12	0	112	508	387	132	0	1027	0	0	0		
5. FALLS OF OBJECTS	1391	788	338	3	2520	3	763	391	150	0	1304	52	43	14	0	109	688	396	139	1	1224	2894	1818	641	4	5157	0	0	0		
6. EXPLOSIVES	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
7. IGNITIONS OR EXPLOSIONS OF FIRE DAMP AND COAL DUST	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
8. OUTBURST OF GAS, DE-OXIGENATION, SUFFOCATION OR POISONING BY NAT. GASES (CO ₂ , CH ₄ , CO, H ₂ S), TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
a. Outbursts of Gas	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
b. De-oxygenation and Poisoning by natural Gases	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9. HEATINGS OR FIRES	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10. INRUSHES	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11. ELECTRICITY	2	6	0	1	9	1	9	0	3	0	3	0	0	0	0	2	1	1	0	4	1	4	10	1	1	16	0	0	0	0	
12. OTHER CAUSES	65	30	8	1	104	1	52	25	3	0	80	6	6	0	0	12	62	18	5	1	85	185	79	16	2	282	0	0	0		
TOTAL	4949	3218	1182	23	9372	23	3595	2105	746	10	6456	222	209	81	2	514	3125	1897	792	11	5825	11891	7429	2801	46	22167	0	0	0		

(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.

SAFETY AND HEALTH COMMISSION
FOR THE MINING
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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 Federal Republic of Germany

YEAR 1982

MAN-HOURS WORKED (1) 198 588 045

Table 7b

SITE OF THE ACCIDENT	PRODUCTION FACES			HEADINGS EXCLUDING SHAFTS & STAPLE-PITS			SHAFTS AND STAPLE-PITS			OTHER PLACES			TOTAL OF ACCIDENTS UNDERGROUND			GROUP ACCIDENTS (2)							
	4-20	21-56	56 FATAL	4-20	21-56	56 FATAL	4-20	21-56	56 FATAL	4-20	21-56	56 FATAL	4-20	21-56	56 FATAL								
	DAYS	DAYS	ACCIDENTS	DAYS	DAYS	ACCIDENTS	DAYS	DAYS	ACCIDENTS	DAYS	DAYS	ACCIDENTS	DAYS	DAYS	ACCIDENTS								
	(3)	(3)	(3) DENITS	(3)	(3)	(3) DENITS	(3)	(3)	(3) DENITS	(3)	(3)	(3) DENITS	(3)	(3)	(3) DENITS								
PERIOD OF INCAPACITY	5.6	3.5	1.3	0.1	10.5	1.1	0.0	9.7	1.1	0.1	0.0	0.2	1.1	0.5	0.2	0.0	1.6	12.4	7.1	2.6	0.1	22.3	
CAUSES OF ACCIDENTS	0.6	0.5	0.5	0.0	1.6	0.3	0.2	0.1	0.0	0.7	0.1	0.1	0.0	1.1	1.0	0.9	0.0	3.0	2.0	1.9	1.6	0.0	5.5
1. Falls of ground and rocks	0.3	0.2	0.2	0.0	0.7	0.1	0.1	0.0	0.2	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.3	0.5	0.3	0.4	0.0	1.3
2. Transport	0.3	0.3	0.2	0.0	0.9	0.2	0.1	0.0	0.5	0.1	0.1	0.0	0.2	0.9	1.0	0.8	0.0	2.7	1.6	1.5	1.1	0.0	4.3
3. Falls and movement of the victim	8.2	5.7	1.7	0.0	15.6	5.5	3.7	1.1	0.0	10.3	0.5	0.6	0.2	7.7	5.0	1.9	0.0	14.6	21.9	15.0	5.0	0.0	41.9
TOTAL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
a. While moving about the mine	8.2	5.7	1.7	0.0	15.6	5.5	3.7	1.1	0.0	10.3	0.5	0.6	0.2	7.7	5.0	1.9	0.0	14.6	21.9	15.0	4.9	0.0	41.9
b. In the course of other activities	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4. MACHINES, TOOLS & SUPPORTS	3.2	2.3	0.8	0.0	6.3	2.6	1.5	0.6	0.0	4.8	0.1	0.1	0.0	2.0	1.0	0.2	0.0	3.2	7.9	4.9	1.7	0.0	14.5
a. Machines	0.7	0.5	0.2	0.0	1.5	0.4	0.3	0.2	0.0	0.9	0.0	0.0	0.0	0.1	0.3	0.1	0.0	0.7	1.5	1.1	0.6	0.0	3.2
b. Tools	1.2	0.7	0.1	0.0	2.1	1.3	0.5	0.2	0.0	2.0	0.1	0.0	0.0	1.3	0.5	0.1	0.0	1.9	3.9	1.8	0.4	0.0	6.1
c. Supports	1.3	1.1	0.4	0.0	2.8	0.9	0.7	0.2	0.0	1.8	0.0	0.0	0.0	0.4	0.2	0.1	0.0	0.6	2.6	1.9	0.7	0.0	5.2
5. FALLS OF OBJECTS	7.0	4.0	1.7	0.0	12.7	3.8	2.0	0.8	0.0	6.6	0.3	0.2	0.1	3.5	2.0	0.7	0.0	6.2	14.6	8.1	3.2	0.0	26.0
6. EXPLOSIVES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7. IGNITIONS OR EXPLOSIONS OF FIREDAMP AND COAL DUST	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8. OUTBURST OF GAS, DE-OXIDATION, SUFFOCATION OR POISONING BY NAT. GASES (CO ₂ , CH ₄ , CO, H ₂ S), TOTAL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
a. Outbursts of Gas	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
b. De-oxygenation and Poisoning by natural gases	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9. HEATINGS OR FIRES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10. INRUSHES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11. ELECTRICITY	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12. OTHER CAUSES	0.3	0.2	0.0	0.0	0.5	0.3	0.1	0.0	0.0	0.4	0.0	0.0	0.0	0.3	0.1	0.0	0.0	0.4	0.9	0.4	0.1	0.0	1.4
TOTAL	24.9	16.2	6.0	0.1	47.2	18.1	10.6	3.8	0.1	32.5	1.1	1.1	0.4	15.7	9.6	4.0	0.1	29.3	59.9	37.4	14.1	0.2	111.6

(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.

SAFETY AND HEALTH COMMISSION
FOR THE MINING
AND OTHER EXTRACTIVE INDUSTRIES

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)

Table 2

YEAR : 1982

COUNTRY : Federal Republic of Germany

MAN-HOURS WORKED (1) 198 588 045

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d2

NATURE OF THE INJURY	AMPUTATIONS AND ENUCLEATIONS		FRACTURES WITH OR WITHOUT DISLOCATION		LUXATIONS TWIST AND SPRAINS		CONCUSSION AND INTERNAL INJURY		OPEN WOUNDS, COMUSION AND MUSCULAR ABRASIONS		BURNS AND HARMFUL EFFECTS OF ELECTRICITY AND RADIATION		POISONING AND SUFFOCATION		MULTIPLES INJURIES OF THOSE NOT SPECIFIED (2)		TOTAL		
	56 FATAL DAYS ACCI- (5) DENIS	TOTAL	56 FATAL DAYS ACCI- (5) DENIS	TOTAL	56 FATAL DAYS ACCI- (5) DENIS	TOTAL	56 FATAL DAYS ACCI- (5) DENIS	TOTAL	56 FATAL DAYS ACCI- (5) DENIS	TOTAL	56 FATAL DAYS ACCI- (5) DENIS	TOTAL	56 FATAL DAYS ACCI- (5) DENIS	TOTAL	56 FATAL DAYS ACCI- (5) DENIS	TOTAL			
I. Head and neck	1	38	15	53	2	2	9	1	10	69	4	73	1	0	1	1	8	2	10
II. Eyes	1	1	0	0	0	0	0	0	0	52	5	5	0	0	1	1	3	0	3
III. Trunk	0	131	3	134	10	10	3	1	4	59	5	64	4	0	2	1	13	1	14
IV. Upper limbs (excluding hands)(3)	4	146	0	146	21	21	0	0	91	91	6	6	0	0	0	0	17	0	17
V. Hands	64	64	469	469	25	25	0	0	274	274	4	4	0	0	3	3	58	0	58
VI. Lower limbs (excluding feet)(4)	5	268	268	268	123	123	0	0	254	254	4	4	0	0	4	4	67	1	68
VII. Feet	11	284	284	284	146	146	0	0	166	166	1	1	0	0	7	7	28	0	28
VIII. Multiple locations	1	9	6	15	0	0	0	0	23	7	30	0	0	0	2	2	5	3	8
IX. Not specified	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	2
TOTAL	86	1 345	24	1 369	327	327	12	2	14	988	16	1 004	25	0	18	3	200	8	208

(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".

(1) Calendar days



FRANCE

A. COMPARATIVE TABLE OF THE NUMBER OF PERSONS INCAPACITATED BY ACCIDENTS FOR LONGER THAN 56 DAYS

FREQUENCY RATES

Years 1958 to 1982

	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973
FRANCE																
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
2) Haulage and transport	1,980	1,695	1,920	2,106	2,196	2,364	2,278	2,153	1,858	1,918	1,966	1,556	1,666	1,959	1,89	2,37
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) Machinery, handling of tools and supports	0,914	1,022	1,821	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
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
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	-	-	0,00	0,029	-	0,00	0,00	0,087	-	-	-
8) Sudden outbursts of firedamp, suffocation by natural gases	0,004	-	-	-	-	-	-	-	-	0,005	-	-	-	-	-	-
9) Underground combustion and fires	-	-	-	0,0	-	-	-	-	-	-	-	-	-	-	-	-
10) Inrushes of water	-	-	-	0,004	0,029	0,004	0,014	0,009	0,014	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	0,00	0,005	0,006	0,014	0,024	0,009	0,01	-
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
TOTAL	14,380	13,594	13,879	14,079	14,239	14,660	14,352	12,517	12,692	12,819	14,570	14,788	15,099	16,609	18,25	20,09
FRANCE																
1) Falls of ground	4,52	3,75	3,82	3,88	4,88	4,86	4,32	4,92	4,33							
2) Haulage and transport	2,36	2,63	2,53	2,44	3,11	2,68	3,47	3,11	2,41							
3) Movement of personnel	4,11	4,29	4,81	5,39	7,43	6,34	7,30	7,12	8,94							
4) Machinery, handling of tools and supports	2,98	2,94	3,17	3,13	3,52	3,22	3,32	4,78	4,11							
5) Falling objects	5,12	4,11	4,11	3,94	3,86	4,22	3,25	3,53	2,69							
6) Explosives	-	0,03	-	0,03	0,05	-	-	-	0,02							
7) Explosions of firedamp or coal dust	0,08	-	0,0	-	-	-	-	-	-							
8) Sudden outbursts of firedamp, suffocation by natural gases	-	0,01	-	0,02	0,05	-	-	-	-							
9) Underground combustion and fires	0,03	0,01	0,01	-	-	-	-	-	-							
10) Inrushes of water	-	-	-	-	0,03	0,04	0,02	-	-							
11) Electricity	9,01	0,03	0,03	0,02	0,03	-	0,02	-	-							
12) Other causes	0,63	0,64	0,49	0,47	0,63	0,78	1,18	1,04	0,88							
TOTAL	28,84	18,44	18,97	19,32	23,59	22,14	22,88	24,50	23,38							

8. COMPARATIVE TABLE OF UNDERGROUND FATALITIES

FREQUENCY RATES

Years 1958 à 1982

FRANCE*	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973
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
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
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
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
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
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	-	-	-
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	-
10) Inrushes of water	-	0,011	0,012	-	0,009	0,024	-	-	0,010	-	-	0,007	0,016	-	0,01	-
11) Electricity	-	0,036	0,029	0,008	-	0,009	0,014	0,014	-	0,005	0,005	-	-	-	0,009	0,03
12) Other causes	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TOTAL	0,584	0,555	0,354	0,382	0,369	0,330	0,359	0,455	0,419	0,332	0,403	0,384	0,585	0,468	0,21	0,35

FRANCE*	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
1) Falls of ground	0,11	0,06	0,09	0,09	0,14	0,06	0,15	0,10	0,06	-	-	-	-	-	-	-
2) Haulage and transport	0,12	0,07	0,10	0,06	0,05	0,04	0,11	0,02	0,11	-	-	-	-	-	-	-
3) Movement of personnel	0,01	0,03	0,03	0,00	-	0,02	0,06	0,02	0,09	-	-	-	-	-	-	-
4) Machinery, handling of tools and supports	0,03	-	0,10	-	0,02	0,02	0,02	-	0,02	-	-	-	-	-	-	-
5) Falling objects	0,03	0,03	0,03	0,02	-	0,02	0,0	-	0,04	-	-	-	-	-	-	-
6) Explosives	-	-	0,01	-	0,02	-	-	-	-	-	-	-	-	-	-	-
7) Explosions of firedamp or coal dust	0,58	-	0,23	-	-	-	-	-	-	-	-	-	-	-	-	-
8) Sudden outbursts of firedamp, suffocation by natural gases	-	-	-	-	-	-	-	0,02	-	-	-	-	-	-	-	-
9) Underground combustion and fires	0,01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10) Inrushes of water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11) Electricity	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12) Other causes	-	-	-	0,02	-	0,02	0,02	-	-	-	-	-	-	-	-	-
TOTAL	0,89	0,19	0,59	0,19	0,23	0,18	0,36	0,16	0,32	0,32	0,403	0,384	0,585	0,468	0,21	0,35

* Including Provence as from 1970

**SAFETY AND HEALTH COMMISSION
FOR THE MINING
AND OTHER EXTRACTIVE INDUSTRIES**

*Common Statistics on victims
of accidents underground in coal mines*

COUNTRY France

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

(absolute figures)

Table 1a

YEAR 1982

MAN-HOURS WORKED (1) 46 421 363

SITE OF THE ACCIDENT	1. PRODUCTION FACES			2. HEADINGS EXCLUDING SHAFTS & STABLE-PITS			3. SHAFTS AND STABLE-PITS			4. OTHER PLACES			5. TOTAL OF ACCIDENTS UNDERGROUND			6. GROUP ACCIDENTS (2)																							
	4-20 DAYS (3)	21-56 DAYS (3)	56 FATAL DAYS (3)	4-20 DAYS (3)	21-56 DAYS (3)	56 FATAL DAYS (3)	4-20 DAYS (3)	21-56 DAYS (3)	56 FATAL DAYS (3)	4-20 DAYS (3)	21-56 DAYS (3)	56 FATAL DAYS (3)	4-20 DAYS (3)	21-56 DAYS (3)	56 FATAL DAYS (3)	7 DAYS (3)	2 DAYS (3)	9 DAYS (3)																					
1. FALLS OF GROUND AND ROCKS	877	444	130	0	1451	0	372	146	49	3	570	2	2	0	4	186	77	22	0	265	1417	669	201	3	2290	7	2	9											
2. TRANSPORT, TOTAL	76	47	18	0	141	0	53	34	16	2	105	11	9	1	1	22	232	162	77	2	473	372	252	112	5	741	0	2	2										
a. Continuous Transport	31	22	8	0	61	0	8	9	3	0	20	0	0	0	0	17	7	7	0	31	56	38	18	0	112	0	0	0	0										
b. Discontinuous Transport	45	25	10	0	80	0	45	25	13	2	85	11	9	1	1	22	215	155	70	2	442	316	214	94	5	629	0	2	2										
3. FALLS AND MOVEMENT OF THE VICTIM	864	468	131	0	1483	0	425	237	82	2	726	44	20	11	1	76	1116	641	211	1	1369	2449	1386	415	4	4254	0	0	0										
a. While moving about the mine	281	131	47	0	459	0	103	72	20	0	195	23	14	8	0	43	505	288	108	0	901	912	505	181	0	1598	0	0	0	0									
b. In the course of other activities	583	337	84	0	1024	0	322	165	62	2	531	21	6	5	1	33	611	353	103	1	1068	1537	881	234	4	2656	0	0	0	0									
4. MACHINES, TOOLS & SUPPORTS,																																							
TOTAL	876	456	89	0	1421	0	357	169	51	1	578	16	5	2	0	23	455	193	49	0	697	1704	823	191	1	2719	0	0	0	0	0	0	0	0					
a. Machines	60	33	12	0	105	0	54	38	17	1	111	0	1	0	0	1	33	27	13	0	73	147	100	42	1	290	0	0	0	0	0	0	0	0					
b. Tools	361	118	25	0	504	0	184	70	13	0	267	13	4	2	0	19	280	91	18	0	369	838	283	58	0	1179	0	0	0	0	0	0	0	0	0				
c. Supports	455	305	52	0	812	0	119	60	21	0	200	3	0	0	0	3	142	75	18	0	235	719	440	91	0	1250	0	0	0	0	0	0	0	0	0				
5. FALLS OF OBJECTS	336	149	41	0	526	0	194	77	20	1	282	13	10	2	0	25	528	209	62	1	800	1071	445	125	2	1643	0	0	0	0	0	0	0	0	0				
6. EXPLOSIVES	0	0	1	0	1	0	0	2	0	0	2	0	0	0	0	0	1	0	0	0	1	1	2	1	0	4	0	0	0	0	0	0	0	0	0	0			
7. IGNITIONS OR EXPLOSIONS OF FIREBAMP AND COAL DUST	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
8. OUTBURST OF GAS, DE-OXIDATION, SUFFOCATION OR POISONING BY NAT. GASES (CO ₂ , CH ₄ , CO, H ₂ S), TOTAL	0	3	0	0	3	0	1	0	0	0	1	0	0	0	0	0	2	2	0	0	4	3	5	0	0	8	1	0	0	0	0	0	0	0	0	0	0		
a. Outbursts of Gas	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
b. De-oxygenation and Poisoning by natural Gases	0	3	0	0	3	0	1	0	0	0	1	0	0	0	0	0	2	2	0	0	4	3	5	0	0	8	1	0	0	0	0	0	0	0	0	0	0	0	
9. HEATINGS OR FINES	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10. INRUSHES	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
11. ELECTRICITY	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	3	2	0	0	5	1	4	2	0	0	6	1	0	0	0	0	0	0	0	0	0	0	0
12. OTHER CAUSES	120	43	12	0	175	0	95	30	6	0	131	9	4	2	0	15	172	59	21	0	252	396	136	41	0	573	0	0	0	0	0	0	0	0	0	0	0	0	
TOTAL	3150	1630	422	0	5202	0	1498	695	204	9	2408	95	50	18	2	185	2875	1365	442	4	4466	7418	3720	1086	15	12239	7	4	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.

**SAFETY AND HEALTH COMMISSION
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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
YEAR 1982
MAN-HOURS WORKED (1) 46 421 363

Table 1b

SITE OF THE ACCIDENT	PRODUCTION FACES			HEADINGS EXCLUDING SHAFTS & STAPLE-PITS			SHAFTS AND STAPLE-PITS			OTHER PLACES			TOTAL OF ACCIDENTS UNDERGROUND			GROUP ACCIDENTS (2)									
	4-20 DAYS (3)	21-56 DAYS (3)	56 FATAL DAYS (3)	4-20 DAYS (3)	21-56 DAYS (3)	56 FATAL DAYS (3)	4-20 DAYS (3)	21-56 DAYS (3)	56 FATAL DAYS (3)	4-20 DAYS (3)	21-56 DAYS (3)	56 FATAL DAYS (3)	4-20 DAYS (3)	21-56 DAYS (3)	56 FATAL DAYS (3)	4-20 DAYS (3)	21-56 DAYS (3)	56 FATAL DAYS (3)							
PERIOD OF INCAPACITY	18.9	9.6	2.8	0.0	31.3	8.0	3.1	1.1	0.1	12.3	0.0	0.0	0.0	0.1	3.6	1.7	0.5	0.0	5.7	30.5	14.4	4.3	0.1	69.3	
CAUSES OF ACCIDENTS	1.6	1.0	0.4	0.0	3.0	1.1	0.7	0.3	0.0	2.3	0.2	0.2	0.0	0.0	5.0	3.5	1.7	0.0	10.2	8.0	5.4	2.4	0.1	16.0	
1. FALLS OF GROUND AND ROCKS	0.7	0.5	0.2	0.0	1.3	0.2	0.2	0.1	0.0	0.4	0.0	0.0	0.0	0.0	0.4	0.2	0.2	0.0	0.7	1.2	0.8	0.4	0.0	2.4	
2. TRANSPORT, TOTAL	1.0	0.5	0.2	0.0	1.7	1.0	0.5	0.3	0.0	1.8	0.2	0.2	0.0	0.0	4.6	3.3	1.5	0.0	9.5	6.8	4.6	2.0	0.1	13.5	
a. Continuous Transport	18.6	10.5	2.8	0.0	31.9	9.2	5.1	1.3	0.0	15.6	0.9	0.4	0.2	0.0	1.6	24.0	13.6	4.5	0.0	42.4	52.8	29.9	8.9	0.1	91.6
b. Discontinuous Transport	6.1	2.8	1.0	0.0	9.9	2.2	1.6	0.4	0.0	4.2	0.5	0.3	0.1	0.0	0.9	10.9	6.2	2.3	0.0	19.4	19.6	10.9	3.9	0.0	34.4
3. FALLS AND MOVEMENT OF THE VICTIM	12.6	7.7	1.8	0.0	22.1	6.9	3.6	0.9	0.0	11.4	0.5	0.1	0.1	0.0	0.7	13.2	7.6	2.2	0.0	23.0	33.1	19.0	5.0	0.1	57.2
a. While moving about the mine	18.9	9.8	1.9	0.0	30.6	7.7	3.6	1.1	0.0	12.5	0.3	0.1	0.0	0.0	0.5	9.8	4.2	1.1	0.0	15.0	36.7	17.7	4.1	0.0	58.6
b. In the course of other activities	1.3	0.7	0.3	0.0	2.3	1.2	0.8	0.4	0.0	2.4	0.0	0.0	0.0	0.0	0.7	0.6	0.3	0.0	1.6	3.2	2.2	0.9	0.0	6.2	
4. MACHINES, TOOLS & SUPPORTS,	7.8	2.5	0.5	0.0	10.9	4.0	1.5	0.7	0.0	5.8	0.3	0.1	0.0	0.4	6.0	2.0	0.4	0.0	8.4	18.1	6.1	1.2	0.0	25.4	
TOTAL	7.2	3.2	0.9	0.0	11.3	4.2	1.7	0.4	0.0	6.3	0.3	0.2	0.0	0.0	11.4	4.5	1.3	0.0	17.2	23.1	9.6	2.7	0.0	35.4	
a. Machines	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1
b. Tools	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
c. Supports	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5. FALLS OF OBJECTS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6. EXPLOSIVES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7. IGNITIONS OR EXPLOSIONS OF FIREDAMP AND COAL DUST	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8. OUTBURST OF GAS, DE-OXIGENATION, SUFFOCATION OR POISONING BY NAT. GASES (CO ₂ , CH ₄ , CO, H ₂ S), TOTAL	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
a. Outbursts of Gas	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
b. De-oxygenation and Poisoning by natural Gases	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9. HEATINGS OR FIRES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10. INRUSHES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11. ELECTRICITY	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12. OTHER CAUSES	2.6	0.9	0.3	0.0	3.8	2.0	0.6	0.1	0.0	2.8	0.2	0.1	0.0	0.0	3.7	1.3	0.5	0.0	5.4	8.5	2.9	0.9	0.0	12.3	
TOTAL	67.9	35.1	9.1	0.0	112.1	32.3	15.0	4.4	0.2	51.8	2.0	1.1	0.4	0.0	3.8	57.6	29.0	9.5	0.1	96.2	159.8	80.1	23.4	0.3	263.7

(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

SAFETY AND HEALTH COMMISSION FOR THE MINING AND OTHER EXTRACTIVE INDUSTRIES

Common Statistics on victims of accidents underground in coal mines

YEAR : 1982

COUNTRY : France

MAN-HOURS WORKED (1) : 46 421 363 Fr2

(absolute figures)

NATURE OF THE INJURY	AMPUTATIONS		FRACTURES WITH OR WITHOUT DISLOCATION		LUXATIONS TWIST AND SPRAINS		CONCUSSION AND INTERNAL INJURY		OPEN WOUNDS, CONTUSION AND MUSCULAR ABRASIONS		BURNS AND HARMFUL EFFECTS OF ELECTRICITY AND RADIATION		POISONING AND SUFFOCATION		MULTIPLES INJURIES OF THOSE NOT SPECIFIED (2)		TOTAL								
	56 FATAL	DAYS ACCI- (5) DENIS	56 FATAL	DAYS ACCI- (5) DENIS	56 FATAL	DAYS ACCI- (5) DENIS	56 FATAL	DAYS ACCI- (5) DENIS	56 FATAL	DAYS ACCI- (5) DENIS	56 FATAL	DAYS ACCI- (5) DENIS	56 FATAL	DAYS ACCI- (5) DENIS	56 FATAL	DAYS ACCI- (5) DENIS		4-20 DAYS TO 56 DAYS (5) DENIS							
I. Head and neck	2	8	2	10	1	1	5	2	7	26	0	0	2	2	676	227	0	903							
II. Eyes	0	0	0	0	0	0	1	1	3	3	0	0	0	0	610	50	0	660							
III. Trunk	0	17	1	18	23	23	12	12	70	70	0	0	4	3	1163	688	0	1861							
IV. Upper limbs (excluding hands)(3)	0	45	45	45	14	14	0	0	56	56	0	0	1	1	904	317	0	1221							
V. Hands	26	191	191	191	18	18	0	0	92	92	0	0	2	2	1970	1198	0	3168							
VI. Lower limbs (excluding feet)(4)	3	67	67	71	71	71	0	0	110	110	0	0	0	0	1040	591	0	1631							
VII. Feet	1	77	77	77	4	4	0	0	33	33	0	0	1	1	601	334	0	935							
VIII. Multiple locations	2	28	2	30	2	2	11	1	57	57	0	0	1	1	456	274	0	730							
IX. Not specified	0	0	0	0	0	0	0	0	2	2	0	0	1	1	9	8	0	17							
TOTAL	34	0	34	433	5	438	133	0	133	29	3	32	449	0	449	0	1	13	4	17	7429	3697	0	0	11126

(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 wrist are included under "upper limbs"
 (4) The hips and the ankles are included under "lower limbs"
 (5) Calendar days

BELGIUM

A. COMPARATIVE TABLE OF THE NUMBER OF PERSONS INCAPACITATED BY ACCIDENTS FOR LONGER THAN 56 DAYS

FREQUENCY RATES

Years 1958 to 1982

	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973
BELGIUM																
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	4,600	4,02
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
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
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
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
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
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
TOTAL	14,924	10,989	11,089	10,638	12,183	12,250	11,799	10,024	10,671	10,771	10,572	13,240	12,073	13,563	12,13	13,17
BELGIUM																
1) Falls of ground	3,99	2,79	2,77	2,55	3,43	3,25	2,4	3,03	1,81	-	-	-	-	-	-	-
2) Haulage and transport	2,43	2,39	2,98	2,21	2,74	2,74	2,3	2,86	2,05	-	-	-	-	-	-	-
3) Movement of personnel	1,70	1,29	1,06	0,93	1,13	1,30	0,8	1,15	1,11	-	-	-	-	-	-	-
4) Machinery, handling of tools and supports	2,18	1,66	1,81	1,55	1,94	1,98	2,1	2,17	1,65	-	-	-	-	-	-	-
5) Falling objects	1,84	1,46	1,63	1,16	1,98	1,98	1,9	2,25	1,40	-	-	-	-	-	-	-
6) Explosives	-	-	0,03	-	-	0,00	0,00	0,00	0,04	-	-	-	-	-	-	-
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	-	-	-	-	0,00	-	-	-	-	-	-	-	-	-	-	-
11) Electricity	0,03	0,03	-	-	-	-	-	0,04	-	-	-	-	-	-	-	-
12) Other causes	0,41	0,06	0,17	0,07	0,16	0,25	0,4	0,29	0,16	-	-	-	-	-	-	-
TOTAL	12,58	9,68	10,45	8,47	11,38	11,50	9,90	11,79	8,22	-	-	-	-	-	-	-

B. COMPARATIVE TABLE OF UNDERGROUND FATALITIES

FREQUENCY RATES

Years 1958 to 1982

	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973
BELGIUM																
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
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
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	-
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	-	0,00	0,025	-	0,03
5) Falling objects	0,016	-	0,008	-	0,010	0,019	0,018	-	-	-	0,016	-	-	-	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	-	0,00	0,00
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	0,470	0,542	0,587	0,528	0,456	0,330	0,462	0,324	0,53	0,54

	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
BELGIUM																
1) Falls of ground	0,06	0,03	0,07	0,03	0,04	0,04	0,1	0,08	0,21	-	-	-	-	-	-	-
2) Haulage and transport	0,06	0,16	0,03	0,07	0,16	0,25	0,2	0,08	0,08	-	-	-	-	-	-	-
3) Movement of personnel	0,03	-	0,07	0,03	-	0,04	0,0	0,08	-	-	-	-	-	-	-	-
4) Machinery, handling of tools and supports	-	0,09	0,03	0,03	0,04	-	0,0	0,04	0,04	-	-	-	-	-	-	-
5) Falling objects	0,03	-	0,03	-	-	-	0,0	0,04	-	-	-	-	-	-	-	-
6) Explosives	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7) Explosions of firedamp or coal dust	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8) Sudden outbursts of firedamp, suffocation by natural gases	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9) Underground combustion and fires	-	-	-	0,0	-	-	-	-	-	-	-	-	-	-	-	-
10) Inrushes of water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11) Electricity	-	-	-	-	-	-	0,0	-	-	-	-	-	-	-	-	-
12) Other causes	-	-	-	-	0,04	-	-	-	-	-	-	-	-	-	-	-
TOTAL	0,18	0,28	0,23	0,16	0,28	0,33	0,3	0,32	0,33	0,587	0,456	0,330	0,462	0,324	0,53	0,54

SAFETY AND HEALTH COMMISSION
FOR THE MINING
AND OTHER EXTRACTIVE INDUSTRIES

Common Statistics on victims
of accidents underground in coal mines

COUNTRY Belgium

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

(absolute figures)

Table 1a

YEAR 1982
MAN-HOURS WORKED (1) 24 332 136

SITE OF THE ACCIDENT	PRODUCTION FACES			HEADINGS EXCLUDING SHAFTS & STABLE-PITS			SHAFTS AND STABLE-PITS			OTHER PLACES			TOTAL OF ACCIDENTS UNDERGROUND			GROUP ACCIDENTS (2)												
	4-20 (3)	21-56 (3)	58 FATAL (3)	4-20 (3)	21-56 (3)	58 FATAL (3)	4-20 (3)	21-56 (3)	58 FATAL (3)	4-20 (3)	21-56 (3)	58 FATAL (3)	4-20 (3)	21-56 (3)	58 FATAL (3)	DAYS ACCI- TOTAL	DAYS ACCI- TOTAL	DAYS ACCI- TOTAL										
1. FALLS OF GROUND AND ROCKS	1450	151	32	5	1638	924	83	11	0	1018	40	4	0	44	134	18	1	0	153	2548	256	44	5	2853	0	0	0	
2. TRANSPORT, TOTAL	73	7	2	2	44	193	45	17	0	255	32	11	13	0	56	136	38	18	0	192	394	101	50	2	547	0	0	0
a. Continuous Transport	23	6	2	2	33	58	14	2	0	74	0	0	0	0	0	19	3	1	0	23	100	23	5	2	130	0	0	0
b. Discontinuous Transport	10	1	0	0	11	135	31	15	0	181	32	11	13	0	56	117	35	17	0	169	294	78	45	0	417	0	0	0
3. FALLS AND MOVEMENT OF THE VICTIM	165	15	3	0	183	446	52	13	0	511	82	7	4	0	93	147	15	7	0	169	840	89	27	0	956	0	0	0
a. While moving about the mine	63	1	0	0	64	159	19	4	0	192	19	4	3	0	26	26	4	2	0	32	267	28	9	0	304	0	0	0
b. In the course of other activities	102	14	3	0	119	287	33	9	0	329	63	3	1	0	67	121	11	5	0	137	573	61	18	0	652	0	0	0
4. MACHINES, TOOLS & SUPPORTS,	420	66	24	0	510	521	85	10	1	618	35	3	0	0	38	157	18	6	0	181	1133	173	40	1	1347	0	0	0
a. Machines	41	12	4	0	57	44	14	2	1	61	2	0	0	2	8	2	1	0	11	95	28	7	1	131	0	0	0	
b. Tools	87	6	1	0	94	151	12	0	0	163	25	1	0	0	26	76	5	2	0	83	339	24	3	0	366	0	0	0
c. Supports	292	48	19	0	359	326	60	8	0	394	8	2	0	0	10	73	11	3	0	87	699	121	30	0	850	0	0	0
5. FALLS OF OBJECTS	573	83	13	0	669	713	75	11	0	799	103	10	7	0	120	214	31	3	0	248	1603	199	34	0	1836	0	0	0
6. EXPLOSIVES	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
7. IGNITIONS OR EXPLOSIONS OF FIREDAMP AND COAL DUST	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8. OUTBURST OF GAS, DE-OXYGENATION, SUFFOCATION OR POISONING BY NAT. GASES (CO ₂ , CH ₄ , CO, H ₂ S), TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
a. Outbursts of Gas	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
b. De-oxygenation and Poisoning by natural Gases	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9. HEATINGS OR FIRES	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10. INJURIES	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11. ELECTRICITY	1	0	0	0	1	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12. OTHER CAUSES	80	5	2	0	87	71	5	0	0	76	19	2	1	0	22	61	3	1	0	65	231	15	4	0	250	0	0	0
TOTAL	2722	327	76	7	3132	2870	346	63	1	3280	311	37	25	0	373	849	173	36	0	1008	6752	833	200	8	7793	0	0	0

(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.

**SAFETY AND HEALTH COMMISSION
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*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 Belgium

YEAR 1982

MAN-HOURS WORKED (1) 24 337 136

Table 1b

SITE OF THE ACCIDENT	PRODUCTION FACES			HEADINGS EXCLUDING SHAFTS & STABLE-PITS			SHAFTS AND STABLE-PITS			OTHER PLACES			TOTAL OF ACCIDENTS			GROUP ACCIDENTS (2)										
	4-20 DAYS (3)	21-56 DAYS (3)	56 FATAL DAYS (3)	4-20 DAYS (3)	21-56 DAYS (3)	56 FATAL DAYS (3)	4-20 DAYS (3)	21-56 DAYS (3)	56 FATAL DAYS (3)	4-20 DAYS (3)	21-56 DAYS (3)	56 FATAL DAYS (3)	4-20 DAYS (3)	21-56 DAYS (3)	56 FATAL DAYS (3)	UNDERGROUND	5	6								
1. FALLS OF GROUND AND ROCKS	35.0	0.2	1.3	0.2	67.3	38.0	3.4	0.5	0.0	41.8	1.6	0.2	0.0	1.8	1.8	106.7	10.5	1.8	0.2	117.3						
2. TRANSPORT, TOTAL	1.4	0.3	0.1	0.1	1.8	7.9	1.8	0.7	0.0	10.5	1.3	0.5	0.5	0.0	2.3	5.6	1.6	0.7	0.0	7.9	16.2	4.2	2.1	0.1	22.5	
a. Continuous Transport	0.9	0.2	0.1	0.1	1.4	2.4	0.6	0.1	0.0	3.0	0.0	0.0	0.0	0.0	0.0	0.8	0.1	0.0	0.0	0.9	4.1	0.9	0.2	0.1	5.3	
b. Discontinuous Transport	0.4	0.0	0.0	0.0	0.5	5.5	1.3	0.6	0.0	7.4	1.3	0.5	0.5	0.0	2.3	4.8	1.4	0.7	0.0	6.9	12.1	3.2	1.8	0.0	17.1	
3. FALLS AND MOVEMENT OF THE VICTIM	6.8	0.6	0.1	0.0	7.5	18.3	2.1	0.5	0.0	21.0	3.4	0.3	0.2	0.0	3.8	6.0	0.6	0.3	0.0	6.9	34.5	3.7	1.1	0.0	39.3	
a. While moving about the mine	2.6	0.0	0.0	0.0	2.6	6.5	0.8	0.2	0.0	7.5	0.8	0.2	0.1	0.0	1.1	1.1	0.2	0.1	0.0	1.3	11.0	1.2	0.4	0.0	12.5	
b. In the course of other activities	4.2	0.6	0.1	0.0	4.9	11.8	1.4	0.4	0.0	13.5	2.6	0.1	0.0	0.0	2.8	5.0	0.5	0.2	0.0	5.6	23.5	2.5	0.7	0.0	26.8	
4. MACHINES, TOOLS & SUPPORTS	17.3	2.7	1.0	0.0	21.0	21.4	3.5	0.4	0.0	25.4	1.4	0.1	0.0	0.0	1.6	6.5	0.7	0.2	0.0	7.4	46.6	7.1	1.6	0.0	55.4	
a. Machines	1.7	0.5	0.2	0.0	2.3	1.8	0.6	0.1	0.0	2.5	0.1	0.0	0.0	0.0	0.1	0.3	0.1	0.0	0.0	0.5	3.9	1.2	0.3	0.0	5.4	
b. Tools	3.6	0.2	0.0	0.0	3.9	6.2	0.5	0.0	0.0	6.7	1.0	0.0	0.0	0.0	1.1	3.1	0.2	0.1	0.0	3.4	13.9	1.0	0.1	0.0	15.0	
c. Supports	12.0	2.0	0.8	0.0	14.8	13.4	2.5	0.3	0.0	16.2	0.3	0.1	0.0	0.0	0.4	3.0	0.5	0.1	0.0	3.6	28.7	5.0	1.2	0.0	34.9	
5. FALLS OF OBJECTS	23.5	3.4	0.5	0.0	27.5	29.3	3.1	0.5	0.0	32.8	4.2	0.4	0.3	0.0	4.9	8.8	1.3	0.1	0.0	10.2	65.9	8.2	1.4	0.0	75.5	
6. EXPLOSIVES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7. LIGHTINGS OR EXPLOSIONS OF FIREBAMP AND COAL DUST	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8. OUTBURST OF GAS, DE-OXIGENATION, SUFFOCATION OR POISONING BY MAT. GASES (CO ₂ , CH ₄ , CO, H ₂ S), TOTAL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
a. Outbursts of Gas	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
b. De-oxygenation and Poisoning by natural Gases	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9. HEATINGS OR FIRES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10. FURNISHES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11. ELECTRICITY	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12. OTHER CAUSES	3.3	0.2	0.1	0.0	3.6	2.9	0.2	0.0	0.0	3.1	0.8	0.1	0.0	0.0	0.9	2.5	0.1	0.0	0.0	2.7	9.5	0.6	0.2	0.0	10.3	
TOTAL	111.9	13.4	3.1	0.3	128.7	118.0	14.2	2.6	0.0	134.8	12.8	1.5	1.0	0.0	15.3	34.9	5.1	1.5	0.0	41.4	277.5	34.2	8.2	0.3	320.3	

(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.

SAFETY AND HEALTH COMMISSION
FOR THE MINING
AND OTHER EXTRACTIVE INDUSTRIES

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 2

YEAR : 1982

MAN-HOURS WORKED (1) : 24 332 136

COUNTRY : Belgium

(absolute figures)

b2

NATURE OF THE INJURY	AMPUTATIONS AND DEBUCCATIONS		FRACTURES WITH OR WITHOUT DISLOCATION		LUXATIONS TWIST AND SPRAINS		CONCUSSION AND INTERNAL INJURY		OPEN WOUNDS, CONTUSION AND MUSCULAR ABRASIONS		BURNS AND HARMFUL EFFECTS OF ELECTRICITY AND RADIATION		POLSONMING AND SUFFOCATION		MULTIPLES INJURIES OF THOSE NOT SPECIFIED (2)		TOTAL			
	56 FATAL DAYS ACCI- (5) DENIS	TOTAL	56 FATAL DAYS ACCI- (5) DENIS	TOTAL	56 FATAL DAYS ACCI- (5) DENIS	TOTAL	56 FATAL DAYS ACCI- (5) DENIS	TOTAL	56 FATAL DAYS ACCI- (5) DENIS	TOTAL	56 FATAL DAYS ACCI- (5) DENIS	TOTAL	56 FATAL DAYS ACCI- (5) DENIS	TOTAL	4 - 20 DAYS ACCI- (5) DENIS	21 - 56 DAYS ACCI- (5) DENIS		FATAL TOTAL		
I. Head and neck	0	4	2	6	0	1	1	3	0	0	0	0	0	0	0	1693	509	121	20	2343
II. Eyes	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	456	77	59	0	592
III. Trunk	0	8	1	9	0	1	1	4	0	0	0	0	0	0	0	1037	844	209	10	1900
IV. Upper limbs (excluding hands)(3)	0	13	0	13	0	0	0	4	0	0	0	0	0	0	0	1744	647	268	0	2659
V. Hands	6	38	0	38	0	0	0	14	0	0	0	0	0	0	0	3931	3336	839	0	8106
VI. Lower limbs (excluding feet)(4)	1	27	1	28	6	6	0	33	0	0	0	0	0	0	0	1535	1010	658	0	3203
VII. Feet	2	13	1	13	1	1	0	12	0	0	0	0	0	0	0	1425	1146	615	0	3186
VIII. Multiple locations	0	5	0	5	0	0	0	0	0	0	0	0	0	3	70	60	32	16	178	
IX. Not specified	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0	0	0	0	0
TOTAL	9	108	4	112	7	0	7	2	0	2	73	0	73	0	0	11891	7429	2801	46	22167

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

ITALY



NETHERLANDS



STATISTICAL TABLES FOR THE EXTRAC-
TIVE INDUSTRIES OTHER THAN THE COAL
INDUSTRY



UNITED KINGDOM

STATISTICAL TABLES FOR EXTRACTIVE INDUSTRIES OTHER THAN COAL

1982

UNITED KINGDOM

MINERAL	MINE, QUARRY OR BORE-HOLE*	NUMBER OF SITES WHERE MINERAL IS WORKED	SALES THOUSAND TONNES	TONS FROM ORE OF MINERAL	PERSONS
LIGNITE					
OIL					
NATURAL GAS					
IRON			84.6		34
FLUORSPAR			280		370
LEAD					
COPPER			15		1143
TIN					
ZINC					
POTASH SALTS			449		827
ROCK SALTS			2,209		372
MARBLE					
- FOR POLISHING					
- FOR SEDIMENTARY					
- IGNEOUS					
- SLATE			785		560
- FOUNDRY SAND			4123		1,030
- INDUSTRIAL SANDS					
SANDS AND GRAVEL			79,287		8101
LIMESTONE			69,114		7568
CLAY SHALE			20,323		1234
CHALK			11,616		909

* S : DEEP MINING
 O : OPENCAST MINING OR QUARRYING
 D : BOREHOLES

STATISTICAL TABLES FOR EXTRACTIVE INDUSTRIES OTHER THAN COAL

MINERAL	MINE, QUARRY OR BORE- HOLE	NUMBER OF SITES WHERE MINERAL IS WORKED	SALES THOUSAND TONNES	TONS FROM ORE OF MINERAL	PERSONS
IGNEOUS ROCK			29,987		4,977
SANDSTONE			10,803		1,914
CLAY (CHINA/BALL)			3,358		3,514
CALCSPAR			18		30
GYPSUM & ANHYDRITE			2,674		564
BARYTES					

FEDERAL REPUBLIC OF GERMANY

EXTRACTIVE INDUSTRIES OTHER THAN COAL

YEAR: 1982

COUNTRY: FEDERAL REPUBLIC
OF GERMANY

SUBSTANCE	TYPE OF SITE *	NUMBER OF SITES OR COMPANIES	PRODUCTION	UNIT	WORKFORCE
LIGNITE	O/S	29	127.333.555	t	19.468
OIL	D	149	4.255.758	t	8.234
NATURAL GAS	D	149	15.114.374	1000m ³	
IRON ORE	S	6	1.313.963	t	719
BAUXITE	-	-	-	-	-
COPPER	S	2	1.303	t (Cu)	1.036
LEAD	S		23.509	(Pb)	
ZINC	S		86.920	(Zn)	
POTASH	S	10	4.274.136	t	8.336
ROCK SALT	S	13	7.033.690	t	1.812
MARBLE	-	-	-	-	-
SLATE	S/O	19	34.195	t	378
FOUNDRY AND INDUSTRIAL SANDS					
ALLUVIAL SANDS AND GRAVEL					
GYPSUM	O	41	1.102.536	t	1.533
STEATITE	O	2	12.239	t	48
KAOLIN	O	23	454.009	t	1.627
PEGMATITE	O	10	113.224	t	148
CALCSPAR	O	3	2.744	t	14
SANDSTONE					
DOLOMITE	O	1			33
SULPHUR	D	3	871.513	t	191
PYRITE	S	2	507.576	t	797
GRAPHITE	S	1	10.606	t	177

* S : DEEP MINING
O : OPENCAST MINING OR QUARRYING
D : BOREHOLE

EXTRACTIVE INDUSTRIES OTHER THAN COAL

YEAR: 1982

COUNTRY: FEDERAL REPUBLIC
OF GERMANY

SUBSTANCE	TYPE OF SITE *	NUMBER OF SITES OR COMPANIES	PRODUCTION	UNIT	WORKFORCE
FLUORSPAR	S	13	78.639	t	113
FELDSPAR	S	13	331.430	t	160
URANIUM	S	2	6.443	t	104
TALC SCHIST	O	4	2.992	t	21
LIMESTONE	S	5	1.418.774	t	100
HEAVY SPAR	O/S	5	179.891	t	274

* S : DEEP MINING
O : OPENCAST MINING OR QUARRYING
D : BOREHOLE

NETHERLANDS



EXTRACTIVE INDUSTRIES OTHER THAN COAL

1982

COUNTRY : NETHERLANDS

SUBSTANCE	TYPE OF SITE*	NUMBER OF SITES OR COMPANIES	PRODUCTION	UNIT	WORKFORCE
LIGNITE					
OIL	D	1	1476502.3	t) ± 2400
NATURAL GAS	D	6	71072 x 10 ⁶	1000 m ³	
IRON ORE					
BAUXITE					
COPPER					
LEAD					
ZINC					
MAGNESIUM					
ROCK SALT	D	1	3638933	t	± 55
MARBLE					
- FOR POLISHING					
- SEDIMENTARY					
- IGNEOUS					

* S : DEEP MINING
 O : OPENCAST MINING OR QUARRYING
 D : BOREHOLE

EXTRACTIVE INDUSTRIES OTHER THAN COAL

1982

COUNTRY : NETHERLANDS

SUBSTANCE	TYPE OF SITE*	NUMBER OF SITES OR COMPANIES	PRODUCTION	UNIT	WORKFORCE
SLATE FOUNDRY AND INDUSTRIAL SANDS ALLUVIAL SANDS AND GRAVEL HARD DIMENSION STONE - BUILDING STONE - PAVING STONE - MONUMENTAL STONE HARD CRUSHED STONE - FOR CONCRETE - ROAD BASES AND SURFACING HARD STONE FOR CALCINATION - FOR LIME-KILNS - FOR CEMENT CHALK GYPSUM					
MARL	0	3	2095710	t	± 80
SANDSTONE	0	1	231002	t	2

* S : DEEP MINING
 O : OPENCASE MINING OR QUARRYING
 D : BOREHOLE

BELGIUM



EXTRACTIVE INDUSTRIES OTHER THAN COAL

YEAR : 1982

COUNTRY : BELGIUM

SUBSTANCE	TYPE OF SITE*	NUMBER OF SITES OR COMPANIES	PRODUCTION	UNIT	WORKFORCE
LIGNITE	O	1	300	t	4
OIL					
NATURAL GAS					
IRON ORE					
BAUXITE					
COPPER					
LEAD					
ZINC					
POTASH					
ROCK SALT					
MARBLE					
- SQUARES	O	4	7.847	m ³ m ²	64
- SLABS (20 mm)			93.413		
- BLOCKS AND CHIPS					
SLATE	S	2	1.224	t	70
FOUNDRY AND INDUSTRIAL SANDS	O	242	10.261.079	t	620
ALLUVIAL SANDS AND GRAVEL	O	63	5.229.089	t	374
HARD DIMENSION STONE					
BUILDING STONE	O	65	141.111	m ³ t	1021
PAVING STONE			47.094		
MONUMENTAL STONE					

* S : DEEP MINING
 O : OPENCAST MINING OR QUARRYING
 D : BOREHOLE

EXTRACTIVE INDUSTRIES OTHER THAN COAL

YEAR : 1982

COUNTRY : BELGIUM

SUBSTANCE	TYPE OF SITE*	NUMBER OF SITES OR COMPANIES	PRODUCTION	UNIT	WORKFORCE
HARD CRUSHED STONE					
- FOR CONCRETE	}	72	25.751.877	t	2.010
- FOR ROAD BASES AND SURFACING					
HARD STONE FOR CAL- CINATION					
- FOR LIME-KILNS	0	17	3.360.727	t	1.240
- FOR CEMENT	0	4	3.547.894	t	110
CHALK AND MARL	0	9	3.444.518	t	190
GYPSUM					
DOLOMITE	0	11	2.739.772	t	396
KAOLIN	0	2	33.263	t	7
CLAYS	0	80	3.000.000(1)	t	2.794
(1) Estimate					

* S : DEEP MINING
 O : OPENCAST MINING OR QUARRYING
 D : BOREHOLE

LUXEMBOURG

EXTRACTIVE INDUSTRIES OTHER THAN COAL

YEAR : 1982

COUNTRY : LUXEMBOURG

SUBSTANCE	TYPE OF SITE*	NUMBER OF SITES OR COMPANIES	PRODUCTION	UNIT	WORKFORCE
LIGNITE					
OIL					
NATURAL GAS					
IRON ORE					
PHOSPHOROUS					
LEAD					
ZINC					
POTASH					
ROCK SALT					
MARBLE					
- FOR POLISHING					
- SEDIMENTARY					
- IGNEOUS					
SLATE					
UNWORKED FLAGS	S	1	1.199	1000	47
FINISHED FLAGS			225	t ₂	
FOUNDRY AND INDUSTRIAL SANDS	O	1	1.225	m ³	2
			11.500	m ³	
ALLUVIAL SANDS AND GRAVEL	O	1	333.851	t	13
HARD DIMENSION STONE					
BUILDING STONE	O	20	4.112	m ³	246
PAVING STONE					
MONUMENTAL STONE	O	1	584	m ³	35
SLABS	O	1	3.900	m ²	id.

* S : DEEP MINING
 O : OPENCAST MINING OR QUARRYING
 D : BOREHOLE

EXTRACTIVE INDUSTRIES OTHER THAN COAL

YEAR : 1982

COUNTRY : LUXEMBOURG

SUBSTANCE	TYPE OF SITE*	NUMBER OF SITES OR COMPANIES	PRODUCTION	UNIT	WORKFORCE
FACING STONE	O	20	974	m ²	246
HARD CRUSHED STONE - FOR CONCRETE - FOR ROAD BASES AND SURFACING	SO	id.	888.319	t	id.
HARD STONE FOR CALCINATION - FOR LIME-KILNS - FOR CEMENT					
SAND	O	id.	208.551	t	id.
GRAVEL	O	id.	64.205	t	11
FOUNDRY SAND					
SLATE					
PLASTER	SO	2	698	t	14
PLASTER SHEETS			7.770	m ²	id.

* S : DEEP MINING
O : OPENCAST MINING OR QUARRYING
D : BOREHOLE

- ITALY



EXTRACTIVE INDUSTRIES OTHER THAN COAL

YEAR : 1982 - PROVISIONAL FIGURES

COUNTRY : ITALY

SUBSTANCE	TYPE OF SITE*	NUMBER OF SITES OR COMPANIES	PRODUCTION t (*)	CONTENTS %	WORKFORCE
LIGNITE	O	2	1.912.675		661
OIL	D	114	1.727.151	}	800
NATURAL GAS	D		14.589.299KWh ³		
IRON ORE	S	2	3.093	Fe 52%	60
BAUXITE	O	2	23.810		42
COPPER	S	2	820	Cu 17%	135
LEAD	S	11	27219	} Pb 60%	1723
ZINC	S		77.103		
POTASH	S	3	1.480.227	K ₂ O 12%	1113
ROCK SALT	S,D	9	3.604.580		244
MARBLE					
- FOR POLISHING	O	722	3.368.000		4520
- SEDIMENTARY	O	64	794.000		1332
- IGNEOUS					
SLATE	S,O	101	112.000		274
FOUNDRY AND INDUSTRIAL SANDS (SILICEOUS)	O	93	2.989.000		493
ALLUVIAL SANDS AND STONE	O	1.496	128.904.000		5985
BUILDING STONE	O	(xx)	18.000.000		(xx)
PAVING STONE					
HARD DIMENSION STONE	O	2.557	10.540.000		14108

* S : DEEP MINING

O : OPENCAST MINING OR QUARRYING

D : BOREHOLE

(*) Expressed in tonnes unless otherwise specified

(**) Included in the entries "marble" and "hard dimension stone"

EXTRACTIVE INDUSTRIES OTHER THAN COAL

YEAR : 1982

COUNTRY : ITALY

SUBSTANCE	TYPE OF SITE*	NUMBER OF SITES OR COMPANIES	PRODUCTION t (*)	CONTENTS	WORKFORCE
MONUMENTAL STONE					
HARD CRUSHED STONE - FOR CONCRETE - FOR ROAD BASES AND SURFACING	0	(xx)	59.458.000		(xx)
HARD STONE FOR CALCINATION - FOR LIME-KILNS - FOR CEMENT	0	(*)	35.134.000		(*)
CHALK	0	88	3.444.000		471
GIPSUM					
CLAY	0	899	35.182.000		2117
DOLOMITE	0	24	1.898.000		140
PYRITE	S	3	666.680	S 40%	598
MANGANESE	S	1	8.727	Mn 30%	12
SULPHUR	S	10	88.854	S 23%	1043
ANHYDRITE	D	12	56.661		126
ASBESTOS	0	1	116.410		277
BARYTES	S	11	180.022	BaSO ₄ 80%	395
FELDSPAR	0	10	783.411		151
FLUORSPAR	S	7	166.949	related to degree of acidity	538
GRAPHITE	S	1	3.210		15
MARL	0	25	12.126.530		310

(*) : INCLUDED UNDER THE ENTRY "HARD DIMENSION STONE".

EXTRACTIVE INDUSTRIES OTHER THAN COAL

YEAR : 1982

COUNTRY : ITALY

SUBSTANCE	TYPE OF SITE*	NUMBER OF SITES OR COMPANIES	PRODUCTION t (*)	CONTENTS %	WORKFORCE
ASPHALT ROCK FOR FACING	O	3	85.838		32
BITUMINOUS ROCK	,				
HYDRATED ALUMINIUM SILICATES (**)	O	27	581.312		183
TALC AND STEATITE	S,O	10	163.770		393
MERCURY (MINERAL)	S	2	17.163	Hg 0,75%	185
ANTIMONY	O	1	598	Sb 56%	55
CELESTITE	O	1	3.272		4
STEAM	D	12	29.585.240		923

(**) including clays and fire clays, fuller's earth and decolourising earth bentonite, kaolin and kaolin clay



DENMARK



EXTRACTIVE INDUSTRIES OTHER THAN COAL

YEAR : 1982

COUNTRY : Denmark

SUBSTANCE	TYPE OF SITE*	NUMBER OF SITES OR COMPANIES	PRODUCTION	UNIT	WORKFORCE
LIGNITE			0		
OIL	D	1	1.686.000	t	
NATURAL GAS			0		
IRON ORE			0		
BAUXITE.			0		
COPPER			0		
LEAD - 71% lead and 0.04% silver concentrate	under- ground mining	[1	141.000	t	} Approx. 300
ZINC - 57% zinc concentrate			37.000	t	
POTASH			0		
ROCK SALT or SEA SALT	D	1	447.000	t	
PEAT LITTER		34	345.000	mm ³	
MARBLE					
- FOR POLISHING					
- SEDIMENTARY			0		
- IGNEOUS					

* S : DEEP MINING
 O : OPENCAST MINING OR QUARRYING
 D : BOREHOLE

EXTRACTIVE INDUSTRIES OTHER THAN COAL

YEAR : 1982

COUNTRY : Denmark

SUBSTANCE	TYPE OF SITE*	NUMBER OF SITES OR COMPANIES	PRODUCTION	UNIT	WORKFORCE
SLATE			0		
SAND, GRAVEL, STONE FOUNDRY AND INDUSTRIAL SANDS	0	900	19.000.000	mm ³	
ALLUVIAL SANDS AND GRAVEL (FROM THE SEA)	dredging	80	2.800.000	mm ³	
HARD STONE BROKEN INTO PIECES - BUILDING STONE - PAVING STONE - MONUMENTAL STONE	0	9	360.000	mm ³	
HARD CRUSHED STONE - FOR CONCRETE - ROAD BASES AND SURFACING			4.000.000		
HARD STONE FOR CALCINATION - FOR LIME-KILNS - FOR CEMENT	0	1	1.333.000	mm ³	
CHALK AND LIME	0		3.300.000	mm ³	
GYPSUM			0		
REFRACTORY CLAY	0	4	300.000	mm ³	
CLAY FOR BRICKS OR TILES	0	80	707.000	mm ³	

- * S : DEEP MINING
- 0 : OPENCAST MINING OR QUARRYING
- D : BOREHOLE

IRELAND

STATISTICAL TABLES FOR INDUSTRIES OTHER THAN COAL

1982

IRELAND

MINERAL	MINE, QUARRY OR BORE-HOLE	NUMBER OF SITES WHERE MINERAL IS WORKED	PRODUCTION	TONS FROM ORE OF MINERAL	PERSONS
OIL	D	3	NIL	-	200
NATURAL GAS	D	2	72.200	M.S.C.F	32
COPPER	S,0	2	6.046 conc	315.890	240
LEAD	}	2	61.245 conc	2109421	1456
ZINC			351.190 conc		
MARBLE -FOR POLISHING	0	3	Not available		12
ALLUVIAL SANDS AND GRAVEL	0	285	Not available		797
HARD DIMENSION STONE					
-PAVING STONE	0	7	Not available		12
-MONUMENTAL STONE	0	11	" "		95
HARD CRUSHED STONE	0	44	" "		503
HARD STONE FOR CALCINATION					
-FOR CEMENT KILNS	0	2	" "		40
GYPSUM	S	2	360.317	SALEABLE	82
LIMESTONE	0	77	Not available		1244
SHALE	0	17	" "		51
BARYTES	S,0	3	265.784	Conc	135
PYRITE	S,0	*	11.315	Conc	*
CLAY	0	8	Not available		40

S : DEEP MINING

O : OPENCAST MINING OR QUARRYING

D : BOREHOLES

* : BYPRODUCT OF COPPER ORE REFERRED TO PREVIOUSLY

FRANCE

The data of 1982 are not available





European Communities — Commission

**EUR 9734 — 20th Report of the Safety and Health Commission for the mining
and other extractive industries — Volume 1**

Luxembourg: Office for Official Publications of the European Communities

1985 — IV, 151 pp., 48 tab., 2 fig. — 21.0 × 29.7 cm

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