

BIO-MEDICAL RESEARCH
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1	20 21	40 41	60	61 62
ANONYMOUS	APME	STAFFORD		11
				12
				13

Title of Report; end with space-hyphen-hyphen-space. Follow with Index Terms,
separated from each other with comma-space. Avoid other punctuation;
do not abbreviate.

1 2	61 62
SYNTHESIS OF THE RESULTS OF THE	21
EPIDEMIOLOGICAL INVESTIGATION CARRIED	22
OUT IN ITALY ON WORKERS EXPOSED TO VCM--	23
MONTEDISON,	24

Source (Journal, Vol., Number, Pages, Date)

1 2	61 62
APPENDIX TO STAFFORD REPORT APME VIENNA	31
90 FEBRUARY 1978	32
APPENDIX TO STAFFORD REPORT TO APME VIENNA 9 JUNE	
1978. REPORT DATED 23 FEB 1978 FM/Lu	

Brief Summary

1 2 10	61 62
SUMMARY:	61
	62
	63
	64

SYNTHESIS OF THE RESULTS OF THE EPIDEMIOLOGICAL INVESTIGATION
CARRIED OUT IN ITALY ON WORKERS EXPOSED TO VCM

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Survey 5

The investigation has started on the first days of 1975 and involved approx. two years of work.

Plants concerned :

- Porto Marghera	MONTEDISON
- Brindisi	MONTEDISON
- Terni	MONTEDISON
- Ravenna	ANIC
- Ferrara	SOLVAY
- Rosignano	SOLVAY
- Ferrandina	LIQUICHIMICA
- Cagliari	SIR RUMIANCA
- Porto Torres	SIR RUMIANCA
- Bollate	MONTEDISON (pilot-plant)
- Villadossola	MONTEDISON (pilot-plant)
- Borgaro Torinese	SIR (pilot-plant)

R&S 113782

It has been considered "exposed" all the workers living or dead, exposed presently or in the past to vinyl chloride for a minimum period of six months.

The investigation has been carried out on 4713 workers, equal to 51% of the exposed ones. It has been possible to ascertain the death of 64 workers, but it is not sure that it is a question of the totality of the deaths which happened in workers exposed during the period taken into due consideration (from starting of production of VCM up to 1975).

Synthesis

Employers	presently exposed	3.071
Employers	ex exposed	1.289
Contract Work	presently exposed	314
Contract Work	ex exposed	36
Uncodified		3
	Total	4.713
Dead		64
	Total	4.787

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Taking into account the fact that "time of exposure" and "level of exposure" change, we have been able to calculate an index of exposure and consequently divide the workers into three exposure classes to be considered indicative.

Synthesis	Exposure Class:			
	low	average	high	uncalculated
N° of workers	1.088	2.446	1.107	70

Clinical instrumental and laboratory investigations

Lung: X-ray photograph of the chest - cytological examination of expectoration

Hands: X-ray photograph of hands - photoplethysmographic of the ten fingers in basis conditions and after cold test

Liver: SGOT and SGPT - gamma GT - alkaline phosphatase - bilirubinemia

Urine: complet examination + cytological examination of sediment in case of hematuria

Blood: complet hemocromocytometric examination - calculation of platelets

Endothelium: study of the vascular centre of eye bott m

The above information has been recorded in an epidemiological filing-card.

RESULTS

X-ray photograph of the chest

Stressing of the bronchial filling	28 %
Report "compatible" with neoplasia	2 cases (in one confirmed)
Results tbc	5,7 %
Others	3 %

In the single classes of age the frequency of report "str ssing of the filling" increases with time of exposure.

R&S 113783

3
It has been noted, in workers in sacking, drying up and stores, 23 cases of pneumoconiosis in workers, which surely have had no further exposures to organic or inorganic dusts.

Cytology of spitting

No significant fact has been shown.

X-ray photograph of hands

Normal	4.000
Results from fractures	165
Suspected acrosteolysis	137
Certain acrosteolysis	27

Photopletismographic examination

3.577 workers have followed the basis tracing and 3.866 did the tracing after cold test.

During the basis tracing 150 cases showed pathological modifications and 742 did the same during the cold test.

96 workers (2,5%) showed pathological modifications of the basis tracing as well as of that after cold test; their distribution in different classes showed that frequency of contemporaneous pathological modification of the two tracings increases in accordance with the increased exposure, quantified by index as well as by time.

Examination of the eye bottom

This examination has been carried out on 4.066 workers. The more significant results are as follows :

sclerosis	488
hemorrhages	14
crossing	63

Insofar sclerosis regards, there is no correspondence between frequency of report and index of exposure.

Vascular syndrome

Among the 3.212 workers submitted to X-ray photograph examination of hands, photopletismographic examination and of eye bottom, four workers (0,12%) showed contemporaneous pathological modification of the three examinations.

These cases can be referred in some manner to a "syndrome of vascular type".

R&S 113784

Hematology

No significant findings concerning RBC, hemoglobin and WBC have been noted.

It has been noted 339 cases (7,5%) of thrombocitopenia in statistically significant progression with increase of exposure.

Analysis of urine

Normal	3.822	83	%
Hematuria	237	5,2	%
Albuminuria	266	5,8	%
Hematuria + Albuminuria	22	0,5	%
Glycosuria	68	1,5	%
Urobilinuria	182	40	%

The frequency of the microhematuria resulted in relation with the index of exposure.

Liver functions

The more frequent pathological changes are the increase of the gamma GT in 28,3% of cases and the presence of hepatomegalia in 44,5% of cases.

Among whom in which an important hepatomegalia is noted, there are more frequent also the thrombocytopenia, acrosteolysis or the pathologic photoplethysmographic value: consequently a syndrome due to vinyl chloride is to be supposed.

Mortality

<u>Cause of death</u>	<u>n°</u>	<u>partial total</u>	<u>Total</u>
Infarct myocardium	9		
Other cardiopathies	1		
Encephalonvasculopathy	6	16	
Tumours			
Trachea	1		
Lung	6		
Lachrymal sac	1		
Esophagus	2		
Stomach	1		
Encephal n	1		
Bladder	3		
Liver	4		

- 5

Hepatic angiosarcoma	3		
Adenocarcinoma cholecysts	1		
Peritoneum	1		
Cutaneous	1		
Testes	1		
Leukemia	2		
Hodgkin	2	30	
Chronic aggressive hepatopathy	5		
Renal failure	3		
Other causes	8	16	
Not taken into due consideration (Terni plant)	2	2	64

It appears from the above that among workers exposed to vinyl chloride the cause of death "tumour" is quite more representative if compared with the expectations.

FM/Lu
20th Febr. 1978

R&S 113786