Relationship between the Asbestos Cumulative Exposure Index (ACEI) and the Latency Period of Asbestos Related Diseases (ARD) within an Italian Study Group of Ex-Asbestos Workers

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About latency time of non-malignant ARD, pleural plaques develop 20-30 years after first exposure, benign pleural efusion after 10-20 years [9]. The latency for development of diffuse pleural thickening is variable and could depend from a relationship with the extent of asbestos exposure [16] and is approximately 30 years following exposure [17].

Since 1992, in Italy, is in force the Italian law 257/1992 which banned further mining, production and trade of asbestos and asbestos-containing goods. The Italian legislation provides that health surveillance of workers previously exposed to asbestos should be continued even after the cessation of exposure to asbestos (Legislative Decree n 277/91). The law makes no reference to the frequency and the limit of extension in time of the clinical examination.

The aims of this study were to study the relationship of non-malignant ARD latency period with asbestos exposure, assessed by means of an asbestos cumulative exposure index (ACEI), and with other potential factors of latency time reduction.

Materials and Methods

In this study ARD were defned as non-malignant asbestos related diseases (unilateral or bilateral pleural plaques, diffuse pleural thickening and asbestosis) and ACR were defned

51-60	47	15.36	25	22.90	22	11.16	1.08	0.13
61-70	140	45.75	61	55.90	79	40.10	1.88	0.06
>70	114	37.25	19	17.45	95	48.20	-2.49	0.01*
First Exposure Age (Years)								
<25	197	64.38	71	65.13	126	63.95	0.14	0.44
25-29	71	23.20	24	22.01	47	23.85	-0.10	0.46
30-34	20	6.54	7	6.42	13	6.59	-0.02	0.49
>=35	18	5.88	7	5.88	11	5.58	0.08	0.46
Cumulative exposure index								
Low-medium	227	0	0					

Chemical -petrochemical industry	3	0.98	1	0.91	2	1.01	-	-
Energy industry	3	0.98	1	0.91	2	1.01	-	-

with Bilateral Pleural Plaques the inverse correlation was stronger (Table 5).

Number of obs = 193
LR chi2(6) = 14.04
Prob > chi2 = 0.03
Pseudo R2 = 0.06
Log likelihood = -101.23

Low-medium latency	**Odds Ratio**	**Std. Err.**	**z**	**P>z**	**95% CI**	
ACEI (ff/ml /year)						
Medium-low	1.00					
High	3.1	1.29	2.71	0.01	1.37	7.01
Age at first exposure (Years)						
<25	1.00					
25-30	1.16	0.47	0.37	0.71	0.52	2.59
30-35	3.76	4.04	1.23	0.22	0.46	30.87
>=35	0.42	0.28	-1.32	0.19	0.11	1.53
Smoking habits						
Non smokers	1.00					
Ex smokers	1.53	0.62	1.04	0.30	0.69	3.38
Smokers	1.19	0.56	0.37	0.71	0.48	2.98
_cons	1.89	0.61	1.97	0.05	1.00	

T e observed signi f cant increasing trend of the ACEI (natural log) means with severity of ARD (Table 3) was in agreement with the widely demonstrated dose response relationship for asbestosis onset [30] while the low ACEI among subject with Asbestos Related Cancer (ARC) was consistent with the no threshold theory [31,32].

T e observed highest frequencies of ARD among subjects exposed for the f rst time before the 1960 were consistent with the results of other experiences in Netherland [33], Finland [34], Israel [10] and Italy [26,35].

Latency times of single ARD were associated with the ACEI. T e length of lag time between exposure and the onset of Asbestos Related Diseases (ARD) it can vary from many decades to few years. Asbestosis can occur shortly a f er exposure if the exposure is very high, while Pleural Plaques (PP) requires a long latency period. Previous experiences reported the occurrence of PP associated to the ACEI adjusted for a latency period of about 15 years [36].

11. American Thoracic Society (2004) Diagnosis and initial management of