

# Epoxy resins sensitization in North-Eastern Italy (1996 – 2010)

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# Introduction to epoxy resins

- Chemicals which contain epoxide groups
- Wide array of applications
- Exceptional properties of hardness and resistance
- Require the use of a hardener for the reticulation process
- Epoxy resin system (resin, hardener, solvents) is a strong sensitizer:
  - Hand and face (airborne exposure)
  - Require short exposure time
  - Production phase or during use (unhardened epoxy products)

# Patients and methods

- Final study included 16267 patients.
- Data from 1996 to 2010, 8 departments in NE-Italy
- Standardized questionnaire for:
  - individual characteristics,
  - occupational history,
  - personal and family history of atopy.
- Patch test removed after 48h, examined on removal and after 24/48h.

# Results (1)

Job	Females	%	Males	%	Total	%
White collar workers	3003	27.33	1,369	25.94	4372	26.88
Household workers	2411	21.94	28	0.53	2439	14.99
Retired	1327	12.08	1,015	19.23	2342	14.40
Healthcare Workers	1708	15.54	486	9.21	2194	13.49
Construction workers	327	2.98	573	10.86	900	5.53
Mechanics	277	2.52	559	10.59	836	5.14
Maids and restaurant workers	499	4.54	255	4.83	754	4.64
Other artisans	335	3.05	150	2.84	485	2.98
Other occupations	164	1.49	140	2.65	304	1.87
Unemployed	205	1.87	95	1.80	300	1.84
Woodworkers	130	1.18	145	2.75	275	1.69
Barbers, hairdressers	191	1.74	18	0.34	209	1.28
Professional drivers	31	0.28	175	3.32	206	1.27
Domestic workers	181	1.65	23	0.44	204	1.25
Farmers and fishers	78	0.71	109	2.07	187	1.15
Chemical industry workers	74	0.67	91	1.72	165	1.01
Paper production workers	19	0.17	27	0.51	46	0.28
Mechanical machines workers	20	0.18	19	0.36	39	0.24
Upholsterers	9	0.08	1	0.02	10	0.06
Total	10989		5278		16267	

# Results (2)

- Prevalence trend is stable over time.
- Prevalence is homogeneous among age quintiles.
- Increase of sensitization over time in construction workers: from 1.4% (1996-1998) to 14.8% (2008-2010); p-value for trend: 0.004.

	Females			Males			Total		
Site	Pos	%	OR (95% CI)	Pos	%	OR (95% CI)	Pos	%	OR (95% CI)
Hand	28	45.90%	1.33 (0.8 – 2.2)	38	57.58%	1.82 (1.1 – 3.0)	66	51.97%	1.61 (1.1 – 2.3)
Leg	2	3.28%	0.47 (0.1 – 1.9)	2	3.03%	0.28 (0.1 – 1.1)	4	3.15%	0.38 (0.1 – 1.0)
Face	15	24.59%	1.1 (0.6 – 2)	9	13.64%	1.09 (0.5 – 2.2)	24	18.90%	0.96 (0.6 – 1.5)
Other	16	26.23%	0.76 (0.4 – 1.3)	17	25.76%	0.65 (0.4 – 1.1)	33	25.98%	0.72 (0.5 – 1.1)

# Results (3)

Job	Males			Females		
	%Pos.	OR	95% CI	%Pos.	OR	95% CI
White collar workers	0.73	1		0.53	1	
Farmers and fishers	2.75	3.88	(1.04 – 14.4)	0		
Construction workers	3.66	5.2	(2.4 – 11.2)	0.92	1.73	(0.5 – 6.0)
Mechanics	1.79	2.48	(1.03 – 6.0)	2.17	4.13	(1.6 – 10.6)
Woodworkers	2.76	3.87	(1.2 – 12.5)	2.31	4.41	(1.3 – 15.3)
Other artisans	2.00	2.79	(0.8 – 10.3)	1.79	3.4	(1.3 – 8.8)
Chemical industry workers	3.30	4.64	(1.3 – 17.2)	2.70	5.18	(1.2 – 23)
Unemployed	3.16	4.44	(1.2 – 16.5)	0		

# Conclusions

- Overall prevalence is stable over time
- There are professions at higher risk and increase in construction trade
- Hands are particularly involved in sensitization
- We can do much for a better prevention
  - Replacement where possible
  - Better training of workers for a safer handling
  - Right technical equipment
  - Improving in directives