Allergies respiratoires professionnelles chez les personnels de santé

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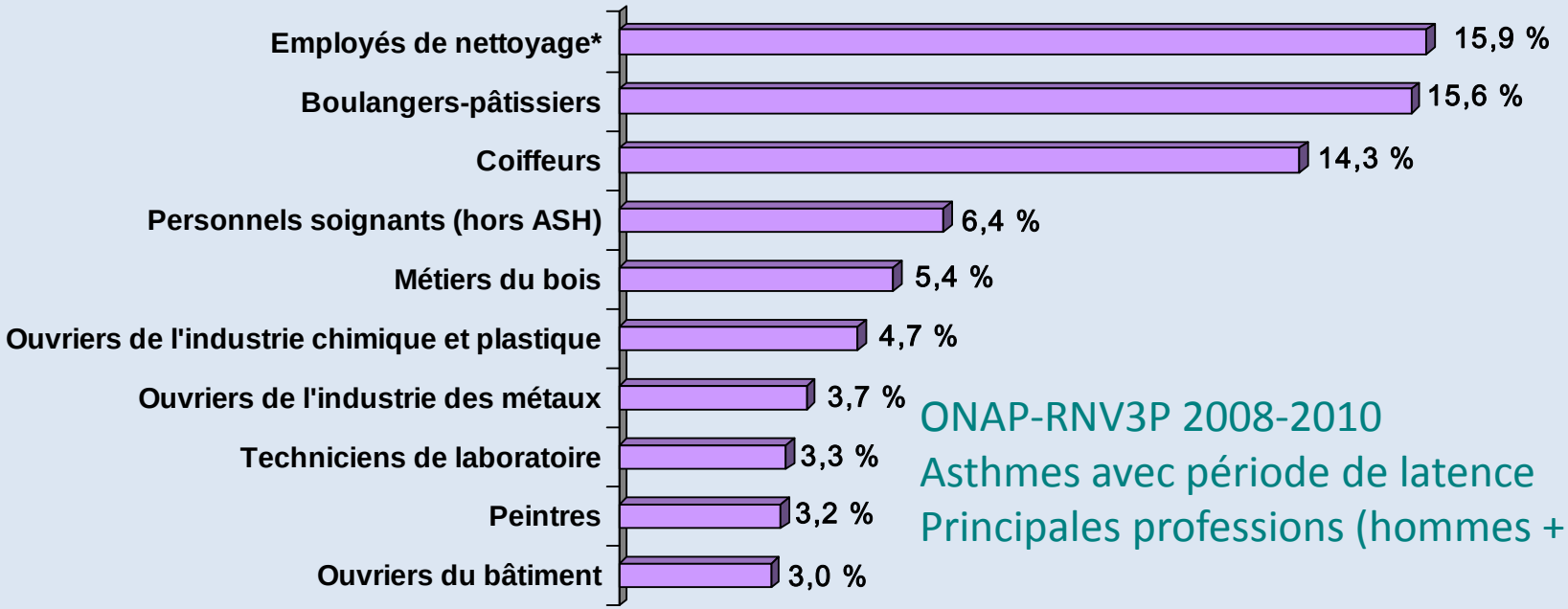
Les personnels en question

- Médical
- Paramédical
- Dentaire
- Pharmaciens
- Laboratoires médicaux
- Aides à domicile/ auxiliaires de vie
- Nettoyage

Part des allergies respiratoires professionnelles en pathologie professionnelle

- Données 1993-1997 pour 4 états américains (Pechter et al, 2005)
  - 8% de la force de travail
  - 16% des cas d'asthme rythmés par le travail
- RNV3P 2008-2010: 4éme rang



ONAP-RNV3P 2008-2010
Asthmes avec période de latence
Principales professions (hommes + femmes)

Agent en cause

1. latex

Agent en cause

2. Produits de nettoyage des locaux

Dégraissant fort et vrai « attention, produit dangereux »

Composition :
5 % ou plus, mais moins de 15 % : savon ; moins de 5 % : agents de surfaces non ioniques. Limonène.

Teepol multi usages « agréablement parfumé »

Dodécyl benzène sulfonate de Sodium, Lauryléther sulfate de Sodium. Composition des détergents : Contient du Parfum contenant une ou plusieurs substances allergisantes à une concentration>0.01% : Limonene

Vigor nettoyant Ammoniaque concentré

alcool alkyl éthoxylé , (2-butoxyéthoxy)éthanol ,alkylbenzène sulfonate de sodium ,ammoniaque , 1,2-benzisothiazol-3(2H)-one

Détergent universel

Composants dangereux: alkyl polyglucoside, 70 % · Règlement (CE) No 648/2004 relatif aux détergents / Étiquetage du contenu agents de surface non ioniques, agents de surface amphotères, agents conservateurs (Diurée acétylénique tétraméthylolée, Methylchloroisothiazolinone, Methylisothiazolinone)

Agent en cause

3. désinfectants de surface ou d'instruments:
Aldéhydes, Ammonium quaternaires, Oxyde d'éthylène, Chloramine

Poste de désinfection d'instrument chirurgicaux

Nettoyage avec un désinfectant de surface

Opération de stérilisation de petits matériels chirurgicaux

Mousse diffuse Anios surfa'safe

COMPOSITION

Chlorure de didécyldiméthylammonium (N°CAS 7173-51-5 : 3 mg/g), excipients.

Lingettes mikrobac

Composition :
La solution de liquide dont sont imbibés les Mikrobac® Tissues contient les substances actives suivantes: chlorure de benzyle-C12-18-diméthylammonium 4 mg/g, chlorure de didécyle diméthylammonium 4 mg/g.

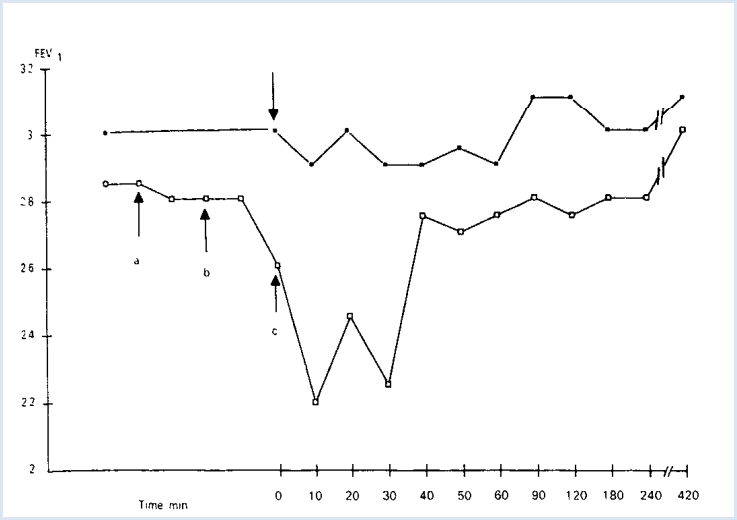
Surfanios premium

COMPOSITION : N-(3-aminopropyl)-N-dodécylpropane-1.3-diamine, chlorure de didécyldiméthylammonium excipients.

Physio-pathologie (1)

Latex

- Mécanisme immunologique, IgE-dépendant
- Rhinite
- Asthme professionnel par inhalation



Lancet 1990 vol 336, p 516-517

- Choc anaphylactique peropératoire
- 13 allergènes, Hev b 6.01, Hev b 02 et Hev b 05

Physio-pathologie (2)

Désinfectants/Antiseptiques

- Irritants voies respiratoires et autres muqueuses

- Exposition massive accidentelle =Syndrome de Brooks

- Asthme professionnel et asthme aggravé par le travail

Asthme sans période de latence

RADS (reactive airways dysfunction syndrome)

- Induits par exposition aiguë massive à un irritant

Synonymes

Syndrome d'irritation bronchique (SIB)

Syndrome de Brooks

Asthmes professionnels
Fraction de risque attribuable

- Blanc P. (*Am. J. Med. 1999 ; 107 : 580 – 7*)
  43 études publiées entre 1996 et 1999
  Médiane : 9 % (15 % en ne retenant que les études ayant la meilleure méthodologie)

- Balmes J et al. (*Am. J. Respir. Crit. Care Med 2003 ; 167 : 787 – 97*):
  Groupe de travail de l'ATS: 23 études antérieures à 2000 , médiane : 15 %

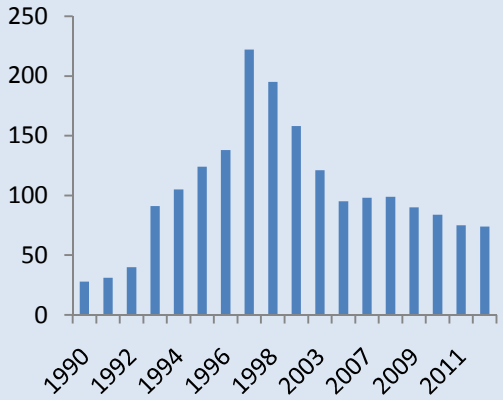
- Torén K, Blanc P. (BMC pulmonary medicine 2009,9:7): études publiées entre 1999 et 2007, médiane 17,6%

- Kogevinas et al. (Lancet 2007;370:336-341): 10 à 25% (Europe du sud: 23%, Europe centrale: 12%, Europe du Nord: 6%)

Epidémiologie (1)

- Allergie au latex

Explosion années 90.



Nombre de publications par année

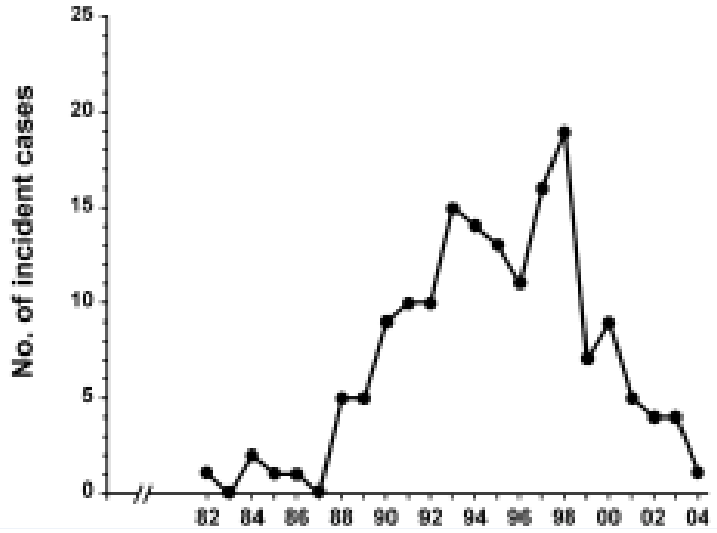
Avant 2004 : Prévalence allergie 4,32% (1,37% pop générale)

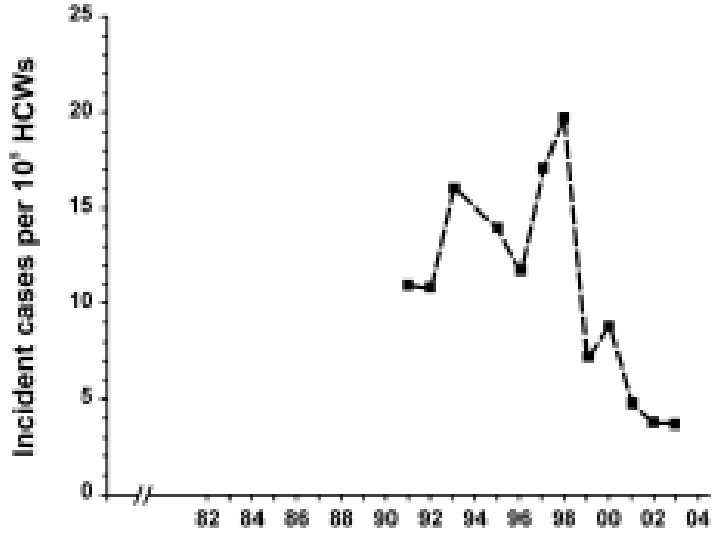
Diminution rapide cf étudiants en dentaire.

Table 1. Positive skin prick tests for latex-related antigens in dental students throughout 4 yr of study

SPT	Latex	Banana	Avocado	Kiwi
Year 1, $n = 53$	3	0	4	1
Year 2, $n = 60$	1	0	4	1
Year 3, $n = 43$	1	0	4	1
Year 4, $n = 34$	1	0	4	1

Ann. occup. Hyg., Vol. 48, No. 5, pp. 455–457, 2004





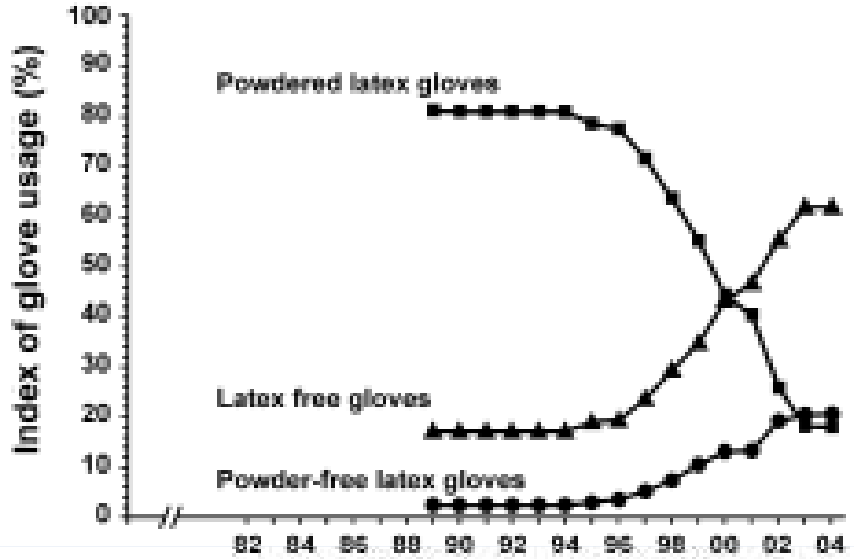


Figure 1. Upper panel: Annual numbers of definite and probable cases of NRL-induced occupational asthma in HCWs categorized by the year of the onset of work-related asthma symptoms. *Middle panel:* Incidence rates of NRL-induced OA expressed as the number of incident cases per 10^3 full-time equivalents of non-administrative employees in Belgian hospitals. *Lower panel:* Usage indices (expressed as % of total glove usage) of the different types of gloves in surveyed Belgian hospitals (■ = powdered latex gloves; ▲ = latex free gloves; ● = powder-free latex gloves). HCWs, healthcare workers; NRL, natural rubber latex; OA, occupational asthma.

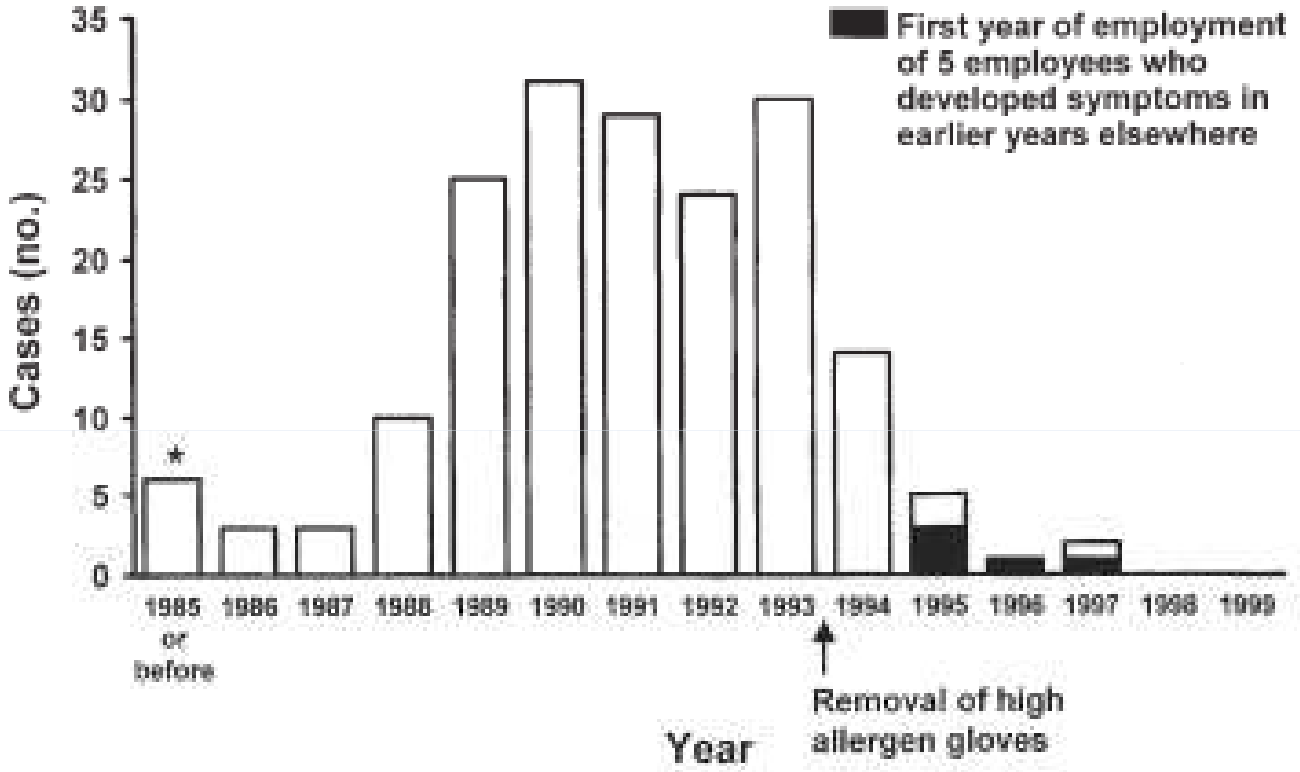


FIG 4. The number of new-onset cases of latex allergy at the Mayo Clinic between the years 1985 and 1999 is shown. *Six cases were in 1985 or earlier, with the earliest in 1971. Five latex-allergic subjects who transferred to the medical center in the years 1995 to 1997 had onset of their symptoms in earlier years elsewhere. Using an estimated 12,000 employees who regularly use gloves per year, we calculated crude incidence rates of 0.15% for the listed years before the 1993 interventions and 0.027% for the years after 1993.

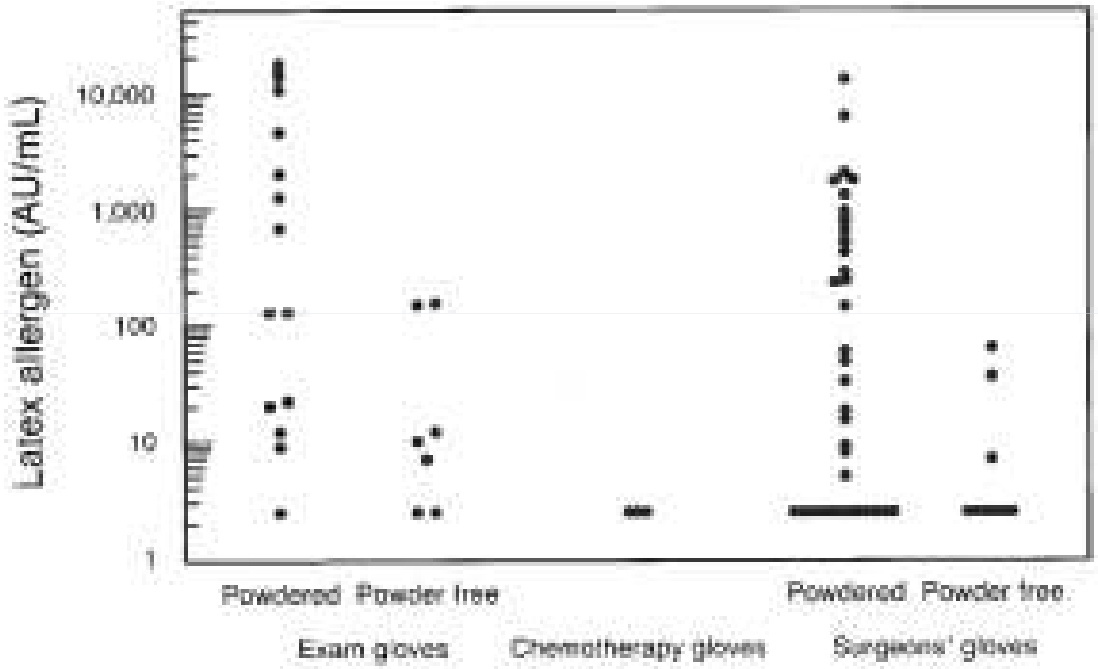


FIG 1. Extractable latex allergens in 1:5 (wt/vol) phosphate-buffered saline extracts of 71 lots of disposable latex medical gloves. *AU*, Allergy units. [Reprinted with permission from Yunginger JW. Update 18. In: Middleton E Jr, Reed CE, Ellis EF, Adkinson NF Jr, Yunginger JW, Busse WW, eds. Allergy: principles and practice. 4th ed. St Louis: Mosby–Year Book; 1994.]

AP- HM TOUS HOPITAUX – Type de gants	Année 2011	Année 2012
Gants latex (total)	51 %	52,5 %
Gants latex poudrés	3 %	2 %
Gants latex sans poudre	48 %	50 %
Gants sans latex	48,5 %	47,5 %

Epidémiologie (2)

Table 1. Recent studies on HCWs and cleaning products asthma

First author, year	Study design	Study population	Assessment of asthma	Assessment of exposure	Results
Laborde-Castérot, 2012 [37]	Series of cases	28 patients (cleaners or HCWs)	Non-specific bronchial hyperreactivity	0.1 ml of an aqueous solution of EDTA	10 published cases of occupational asthma and/or rhinitis in patients exposed to EDTA-containing products
Gonzalez, 2013 [19**]	Crosssectional study	543 HCWs, aged 18–65 years	Self-administered questionnaire, physical examination	Work questionnaire, workplace studies, review of products ingredients	Exposure to QACs increased significantly the risk of reported physician-diagnosed asthma and nasal symptoms at work (OR = 7.5 and 3.2, respectively)
Arif, 2012 [9*]	Population-based survey	5600 HCWs, aged 45.3 years	Questionnaire	A detailed history of the job using the questionnaire	Significantly elevated odds of WEA for exposure to bleach, glutaraldehyde/ortho-phthalaldehyde, chloramines and ethylene oxide and formalin/formaldehyde. Exposure to chloramines was significantly associated with OA
Walters, 2013 [39]	Notifications for 21 years from the SHIELD electronic database	182 notifications of OA in HCWs	Serial peak-flow measurements, sIgE, SICT	Data on sensitizing agents from electronic database	Cleaning product-related OA was an emerging cause with 22 cases after 2001 and only 5 cases between 1991 and 2000. 75% of cases involved nursing, operating theatre, endoscopy and radiology staff

EDTA, ethylenediamine tetraacetic acid; HCWs, healthcare workers; OA, occupational asthma; SICT, specific inhalation challenge test; sIgE, specific IgE; QACs, quaternary ammonium compounds.

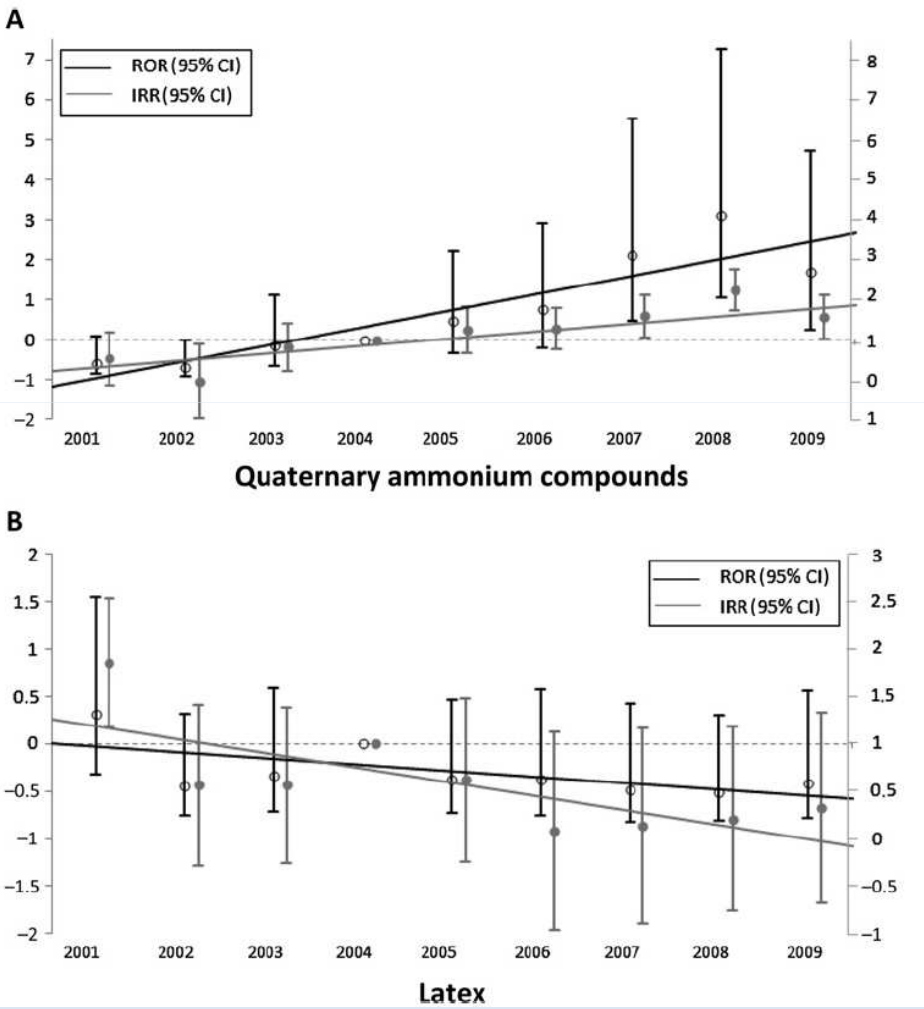
Curr Opin Allergy Clin Immunol 2014, 14:113–118

TABLE 2. UNIVARIATE ANALYSIS BETWEEN INDEPENDENT VARIABLES, AS ASSESSED BY A JOB-EXPOSURE MATRIX, AND QUESTIONNAIRE FOR LONGEST HELD JOB AMONG TEXAS HEALTH CARE WORKERS, AND TWO ASTHMA OUTCOMES, WEIGHTED BY SURVEY SAMPLE SIZE IN THE ANALYTIC SAMPLE

	Reported Asthma*		BHR-related Symptoms†	
Variable	Odds Ratio (95% CI)	p Value	Odds Ratio (95% CI)	p Value
Sociodemographics				
Age (per 10-yr increments)	1.18 (1.00–1.38)	0.05	0.88 (0.79–0.98)	0.02
Sex (male)	1.00		1.00	
Female	2.31 (1.35–3.94)	0.002	2.28 (1.73–3.01)	< 0.001
Race/ethnicity (non-Hispanic white)	1.00	0.006‡	1.00	0.04‡
Hispanic	1.62 (0.86–3.04)		0.70 (0.46–1.07)	
Non-Hispanic black	0.20 (0.07–0.58)		1.23 (0.69–2.20)	
Other	1.13 (0.49–2.63)		0.56 (0.34–0.92)	
Obesity (BMI ≥ 30 kg/m²)	2.03 (1.23–3.34)	0.002	1.59 (1.18–2.13)	0.005
Smoking				
Nonsmokers	1.00		1.00	
Current smokers	1.16 (0.52–2.61)	0.75‡	0.95 (0.60–1.51)	0.86‡
Former smokers	1.22 (0.71–2.10)		1.08 (0.80–1.45)	
Atopy	3.31 (1.99–5.48)	< 0.001	8.80 (6.22–12.45)	< 0.001
Occupational exposures§				
Seniority (quartiles)				
0–9 yr	1.00	0.03‡	1.00	0.15‡
10–16 yr	2.08 (0.64–6.73)		0.67 (0.45–1.02)	
17–26 yr	3.37 (1.10–10.26)		0.78 (0.52–1.16)	
≥ 27 yr	4.10 (1.39–12.11)		0.66 (0.45–0.96)	
Professional group (physicians)	1.00	0.02‡	1.00	< 0.001‡
Occupational therapists	1.06 (0.63–1.78)		2.32 (1.80–2.98)	
Nurses	1.89 (1.18–3.03)		1.95 (1.51–2.52)	
Respiratory therapists	1.30 (0.78–2.17)		2.01 (1.55–2.61)	
Spill at work	1.32 (0.58–2.99)	0.51	1.82 (1.16–2.85)	0.01
Cleaning agents				
Patient care	1.43 (0.19–10.81)	0.73	0.72 (0.29–1.75)	0.47
Instrument cleaning	2.07 (1.29–3.33)	0.003	1.40 (1.09–1.79)	0.01
Building surfaces	1.87 (1.14–3.05)	0.01	1.74 (1.34–2.26)	< 0.001
Latex gloves				
< 1992	1.84 (0.84–4.06)	0.13	1.02 (0.72–1.45)	0.91
1992–2000	1.94 (1.15–3.28)	0.01	1.36 (1.03–1.79)	0.03
> 2000	0.51 (0.16–1.65)	0.26	0.71 (0.42–1.21)	0.21
Aerosolized medications	1.66 (1.03–2.66)	0.04	1.57 (1.22–2.01)	< 0.001
Adhesives/solvents/gases				
Patient care	1.67 (1.01–2.77)	0.05	1.86 (1.42–2.44)	< 0.001
On surfaces	0.58 (0.36–0.93)	0.02	1.25 (0.98–1.59)	0.08
Miscellaneous/other	0.52 (0.32–0.84)	0.008	0.74 (0.57–0.95)	0.02

Epidémiologie (3)

Figure 1 (A) Comparisons of incidence rate ratio (IRR) and reporting odds ratio (ROR) for work-related asthma (WRA) to quaternary ammonium compounds. ROR was obtained using a logistic regression model, and IRR was obtained using the zero-inflated negative binomial (ZINB) model. All models took year 2004 as reference. ROR, Kendall correlation test: +0.833, p=0.001; IRR, Kendall correlation test: +0.340, p<0.001. (B) Comparisons of IRR and ROR for WRA to latex. ROR was obtained using a logistic regression model, and IRR was obtained using the ZINB model. All models took year 2004 as reference. ROR, Kendall correlation test: −0.666, p=0.012; IRR, Kendall correlation test: −0.402, p<0.001.



Occup Environ Med 2012;**69**:391–397. doi:10.1136/oemed-2011-100487

Usages des ammoniums quaternaires

- **colorant** (additif donnant au papier une certaine couleur et/ou un certain degré de blanc) dans l'industrie du papier (Commission Européenne, 2001b) ;
- **biocide** dans l'industrie du papier, du cuir et de l'abattage / équarrissage ainsi que dans les systèmes de refroidissements industriels (Commission Européenne, 2001b ; Commission Européenne, 2003b ; Commission Européenne, 2005 ; Commission Européenne, 2001a) ;
- **tensio-actif** dans l'industrie du papier et du textile (Commission Européenne, 2001b ; Commission Européenne, 2003c) ;
- **tensio-actif**, agent complexant et comme bactéricide dans l'industrie du cuir (Commission Européenne, 2003b) ;
- **fixateur cationique** dans l'industrie du textile (Commission Européenne, 2003c) ;
- **produit fixateur** de teinture, agent d'unisson, antistatique, adoucissant dans l'industrie du textile (Commission Européenne, 2003c).

Diagnostic

- Questionnaire

- Tests cutanés allergiques / dosage d'IgE spécifiques

- Exploration fonctionnelle respiratoire:
    - Débitmètre longitudinale/ spiro lundi-vendredi
    - Variation de niveau de réactivité bronchique

Poudre d’extincteur

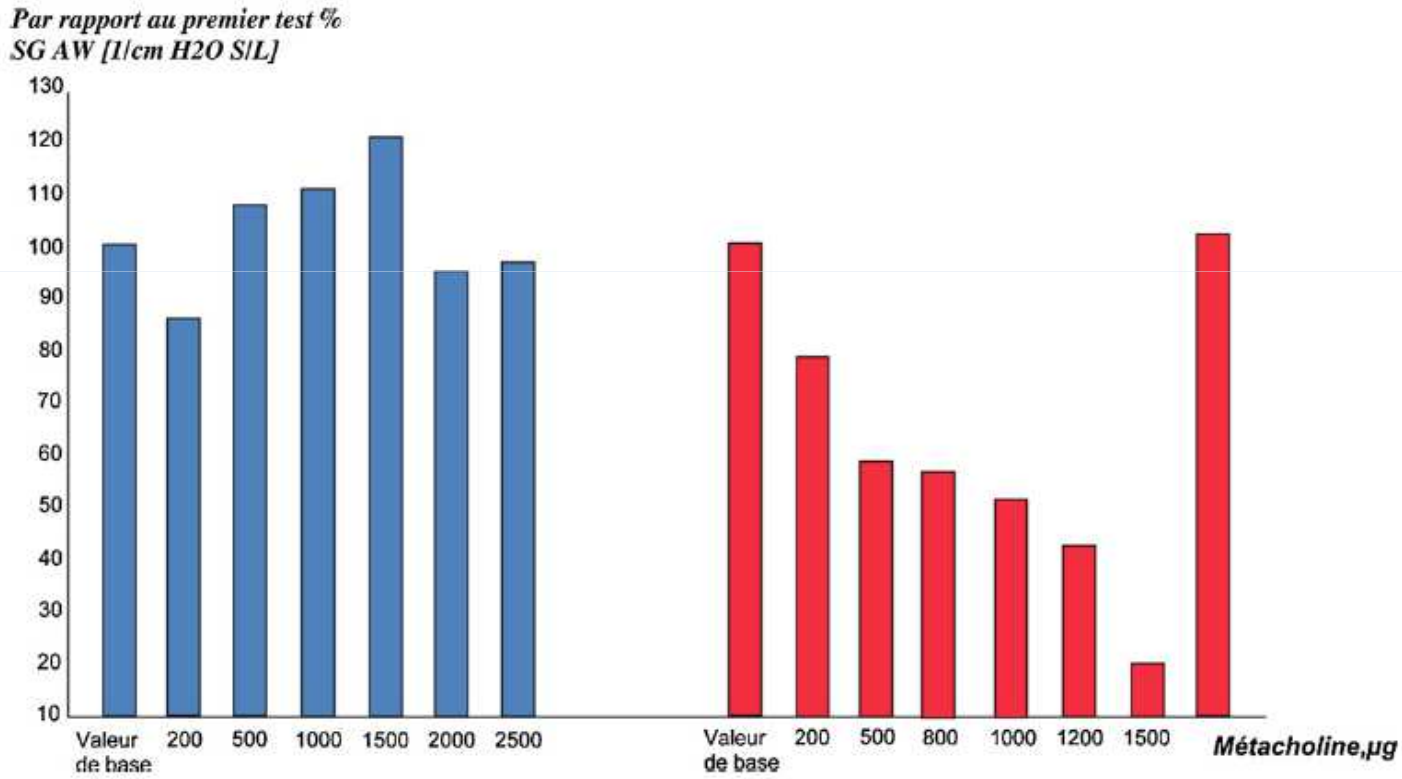
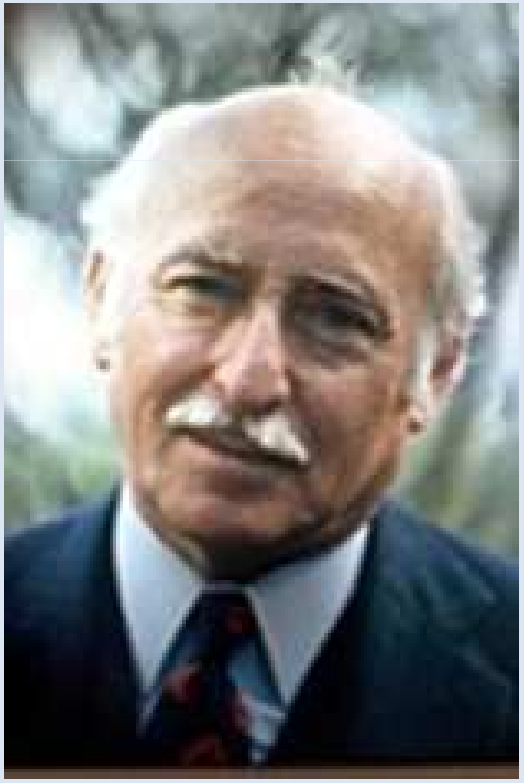
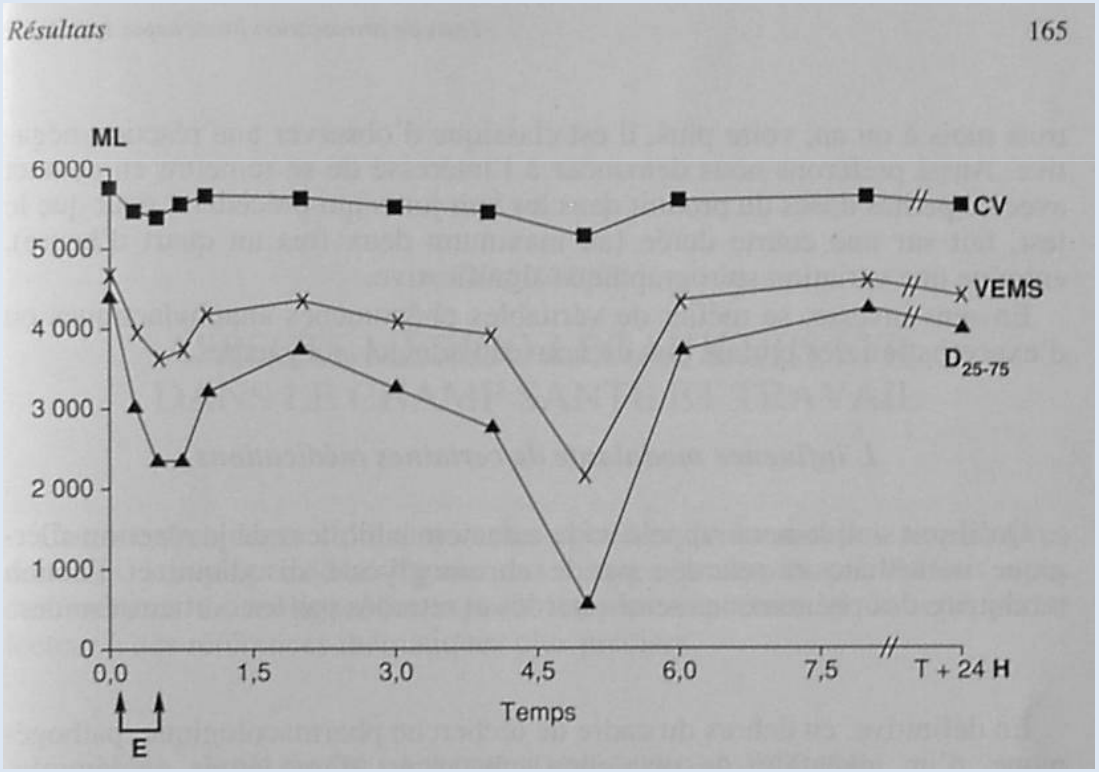


Fig. 1. Les histogrammes montrent l’évolution des conductances spécifiques des voies aériennes exprimées en pourcentage de leur valeur en début de test (à gauche, le premier test de provocation, à droite, le deuxieme test, pratiqué après l’épreuve d’exposition).

F. Bettayeb, D. 96 Charpin / Revue française d’allergologie 53 (2013) 95–97

Test de provocation bronchique spécifique





Conclusion

- Pathologie fréquente
- Agents étiologiques changeants et intriqués
- Conséquence médico-sociale importante
- Importance de la prévention primaire