

Hairdressers still at risk of allergy to persulfates found in hair bleach

Persulfates are powerful oxidising agents used in hair bleach and some swimming-pool products (for individual pools or Jacuzzis/hot tubs). These substances are irritating and sensitising for the skin and respiratory tract, and have already been described in numerous scientific publications on occupational asthma and eczema in hairdressers. Sometimes reaching a concentration of 60% in hair bleach, they were found by the French National Network for the Monitoring and Prevention of Occupational Diseases (RNV3P) to be involved in numerous occupational health problems between 2001 and 2009. In 2011, under the European REACH¹ and CLP² regulations, the French Agency for Food, Environmental and Occupational Health & Safety (ANSES) identified ammonium, sodium and potassium persulfate salts as priority chemicals involved in work-related allergies. In a scientific opinion published in February 2014 on the best risk management option analysis for these persulfates [1], ANSES confirmed the risk from occupational use of hair bleaching products. The Agency then recommended assessing persulfate salts under the European Cosmetics Regulation³, which falls

within the remit of the ANSM⁴ and the SCCS⁵.

The RNV3P data were analysed again for the period 2001-2015 to assess recent trends in diseases related to persulfate exposure, as part of a doctoral thesis in medicine [2]. The study selected patients for whom the conclusion of their consultation in an occupational pathology consultation centre (CCPP) was "occupational disease possibly related (causality not excluded) to exposure coded as 'persulfate', 'oxidants' and 'bleach (cosmetics)' or 'bleach, hair lightening'". Patients for whom one of the following keywords appeared in the free-text part of the RNV3P dossier were also included: persulfate, peroxymonosulfate, swimming pool, commercial products containing peroxymonosulfates, if and only if a possible link between the disease and this exposure was specified.

The observed diseases were grouped into three main categories – asthma, rhinitis and allergic contact dermatitis (ACD) – and studied separately.

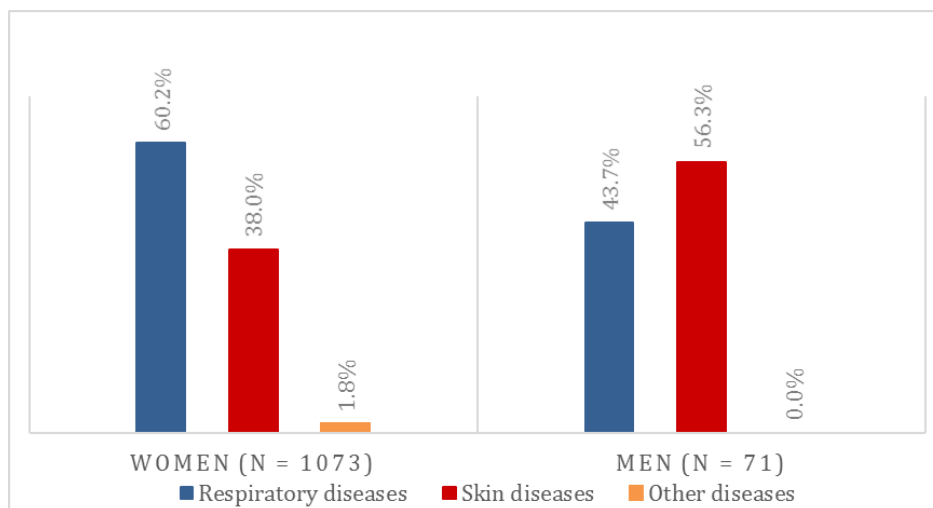


Figure 1: Distribution of diagnosed diseases related to persulfate exposure, and by gender.

1. Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH)
2. Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures
3. Regulation (EC) No 1223/2009 of the European Parliament and of the Council of 30 November 2009 on cosmetic products
4. French Health Products Safety Agency
5. European Commission's Scientific Committee on Consumer Safety

During the study period, 1,144 patients were registered as having a disease possibly related to persulfate. The vast majority of these were women (94%), with an average age of 29 (versus 34 years for men). One in four patients was an apprentice, despite them accounting for only 1.5% of all patients seen in the CCPPs. Not surprisingly, the most widely represented industry sector was hair and beauty (98% of cases).

Women were more likely to have a respiratory disease (asthma or rhinitis), while men were more prone to skin diseases (Figure 1). Of the other diseases observed in women, conjunctivitis was the main one.

The time trend analysis showed that the role of persulfates in cases of asthma related to occupational exposure fell by 74% between 2001 and 2015 (Figure 2), and by 68% for rhinitis (Figure 3). In contrast, persulfate-related allergic contact dermatitis (ACD) remained stable over this period (Figure 4).

The impact on these trends of improved protective measures (for asthma and rhinitis) on these trends, or their persistent inadequacy (for ACD), has yet to be demonstrated by appropriate studies in the workplace.

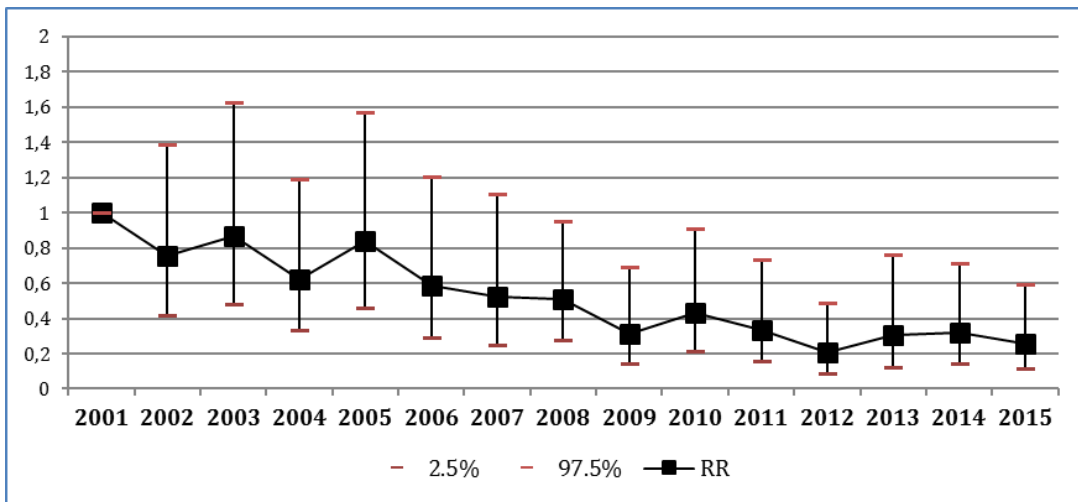


Figure 2: Relative risk (RR) of persulfate-related asthma compared to 2001, adjusted for age, reporting year, number of non-persulfate-related asthma cases, and 95% confidence interval.

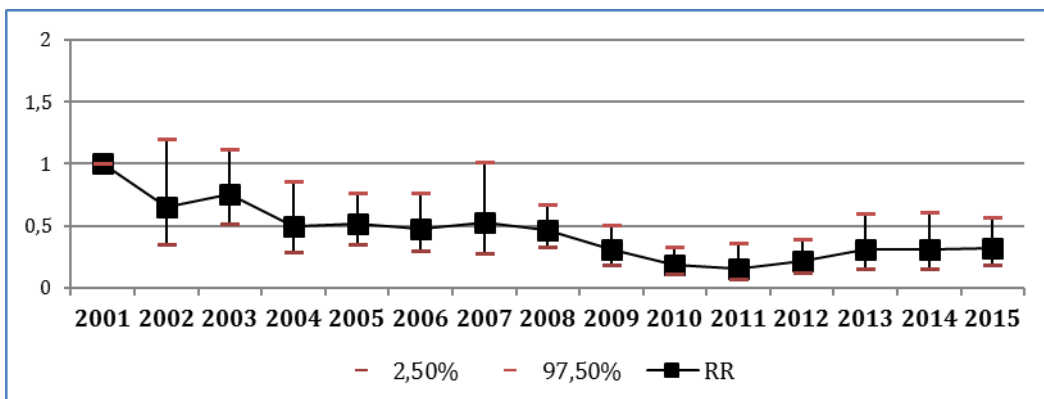


Figure 3: Relative risk of persulfate-related rhinitis compared to 2001, adjusted for age, reporting year, number of non-persulfate-related rhinitis cases, and 95% confidence interval.

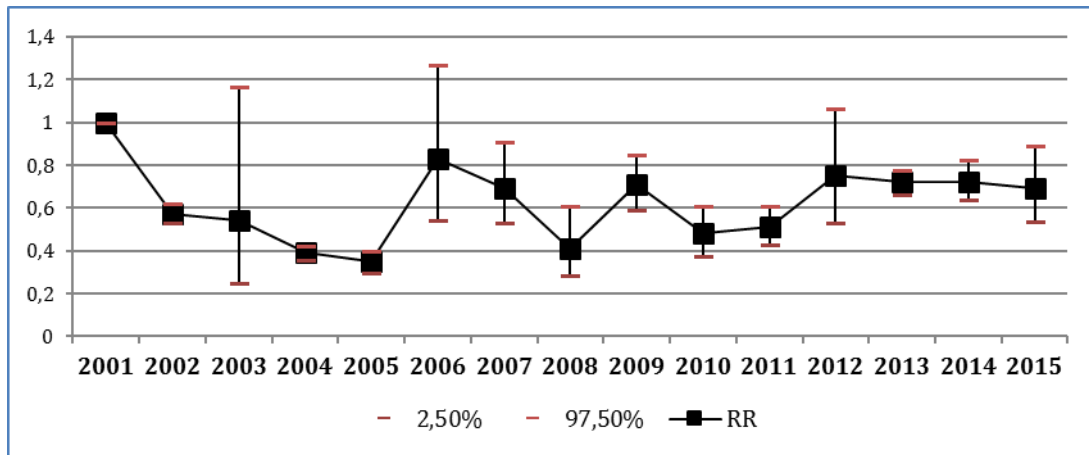


Figure 4: Relative risk of persulfate-related ACD compared to 2001, adjusted for age, reporting year, number of non-persulfate-related ACD cases, and 95% confidence interval.

The early onset of these diseases in professional life in the hair and beauty sector, and their finality once the allergy has become established, underline **the need to further strengthen personal and collective preventive measures** to address the risks associated with persulfate exposure. Apprentices, who are particularly exposed, should be trained in these risks as soon as possible.

Measures could include opting to use hair bleach in granular or cream form rather than powder, as well as "closed-loop" packaging that enables products to be mixed without opening the packets. General ventilation of the room where the hair treatment is applied is essential, along with cleaning of all surfaces with a damp cloth. Lastly, the use of work gloves during bleach preparation, application and rinsing, as well as when cleaning equipment, is key to prevention of contact dermatitis.

Juliette BLOCH (Anses)

TO FIND OUT MORE, VISIT

[1] Opinion of the French Agency for Food, Environmental and Occupational Health & Safety on the best risk management option analysis for cosmetic uses of potassium, ammonium and sodium persulphates (6 February 2014)

[2] Tomas-Bouil Aurélie. Étude des cas d'exposition professionnelles et non professionnelles aux persulfates dans les dispositifs de vigilance [Case study of occupational and non-occupational exposure to persulphates in vigilance schemes]. Thesis for the State diploma of Doctor of Medicine. University of Versailles-Saint-Quentin en Yvelines. December 2017. <https://www.anses.fr/fr/content/réseau-national-de-vigilance-et-de-prévention-des-pathologies-professionnelles-rnv3p>