Association de Recherche Clinique
en Allergologie et Asthmologie

SPECIFICATIONS

- AEROSOL PRODUCTS -

Written by

The two expert members of ARCAA
Doctor Patricia TARDIEUX and Doctor Eric THOMAS

Under the direction of the Expert
Doctor Sebastien LEFEVRE - CHR of METZ

Validated by the members of the Board and the President
of ARCAA:
Dr. Isabelle Bossé

Table of Contents

FORWORD

1. Introduction

The specifications are based on a partnership between health professionals specialized in allergic pathologies, gathered in an associative group representing the French allergists' community (ARCAA: association of clinical research in allergology and asthmology) and the R-LAB consulting company to develop a preventive approach and "controlled allergen" approval of industrial products for a reduction of their allergenic potential.

It aims to address the ***following issues***:

- the lack of approval of hypo-allergenicity in France by an independent agency of the productionindustry.

- considering indoor air pollution, which is a public health problem.

- the difficulties for consumers suffering from contact skin allergy and respiratory allergy (nasal and bronchial) to have products of maximum safety available on the French market for use in the domestic and professional environment.

- the willingness to support manufacturers of airborne substances who focus on the prevention of skin and respiratory allergic diseases, as well as on the prevention of relapses in sensitized subjects, a common source of disability among domestic users and cleaning professionals.

- Finally, the know-how of manufacturers must be recognized, and consumers must be given greater transparency on the composition of their products.

It is ***not intended*** to analyse the ***carcinogenic*** and ***endocrine disrupting potential*** of the ingredients studied.

2. Main Objective

Set a higher level of quality than that established by French and European legislation.

3. Basic Principles of the Specifications

3.1 Adopt transparency with regard to the consumer, using a communication method that does not mislead them.

3.2 The certification process will be evolutionary, adopting the ***vintage*** principle, according tothe ***most recent data*** in international literature in the field of skin and respiratory allergy.

3.3 Leave enough space to constantly adapt to the requirements of technical progress and the evolution of European legislation on allergenic and airway-damaging substances.

3.4 Apply the precautionary principle to questions raised by the allergological scientific community, which have not found scientifically validated answers or are awaiting validation.

3.5 Change the behavior of the population by optimizing the use of manufactured products to reduce the effect of indoor pollution.

3.6 In no case promote products delivered in aerosols.

4. Regulatory Basis

The specifications, apart from the regulatory provisions, shall govern the manufacture, control, packaging, placing on the market, labelling, import and distribution of aerosols for indoor environmental sanitation, in particular with regard to the classification, packaging and labelling of dangerous preparations.

Compliance with the various regulations and recommendations is a prerequisite for labelling: it is the manufacturer's responsibility to ensure that the product will comply with all relevant regulations.

Any amendment to an EC regulation described in this chapter will be applicable accordingto its date of entry into force, even before the updating of this specification:

1. At European level: It must comply with the Regulation on classification, labelling and packaging of substances and mixtures EC 1272/2008 (CLP) and its annual adaptations (adaptation to technical and scientific progress)

2. At French level: All members, including France, are subject to the CLP regulation EC 1272/2008.

3. Especially allow access to the full composition, through the website "allergens-controlled.com", which will be specified on the product packaging, and by creating a link tothe manufacturer's website which will allow easier updates (put the link of the manufacturer's website).

Other regulations and recommendations

- Directive 2006/114/EC of the European Parliament and of the Council of 12 December 2006(misleading and comparative advertising).
- Directive 2001/95/EC of the European Parliament and of the Council of 3 December 2001 ongeneral product safety.
- Articles L.115-27 to L. 115-33 and R. 115-1 to R. 115-3 of the Consumer Code.
- The First and Second Opinions of the National Consumer Council on the clarification ofEnvironmental Claims, dated 6 July and 15 December 2010 respectively.
- CSHPF (French High Council for Public Hygiene) recommendations.
- IFRA (International Fragrance Association) guidelines.

SPECIFICATIONS ARTICLES

1. Proponent

ARCAA (Association de Recherche Clinique en Allergologie et Asthmatologie - clinical research association in allergology and asthmatology) representing the French allergology community

2. Sources

Literature and experiements on the allergic risk of aerosols.

3. Business Target

Manufacturers of aerosol products wishing to be labelled "allergen controlled".

4. Relevant Public

General public, professional interior cleaning environment.

5. Selection of Files

Aerosols:

- The evaluation covers the composition of substances in a range of labellable products, likely to contain substances with known allergenic and/or irritant potential and which are often a source of allergic symptoms.
- The prospective method has been chosen. It is necessary to proceed with this evaluation in the presence of representatives of the relevant industries, of a panel of users, as it will be necessary to check with them certain information on the offered products (or the absence of certain information).

NB: only products containing substances that have not been found to be carcinogenic or endocrine disrupting will be evaluated.

6. Field of Application

This specification applies to indoor air fresheners in aerosols or non-pressurized spray form. For the definition of aerosols, we use the definition of the ***European Directive n° 75/324/EEC:***

> Aerosol dispenser, within the meaning of this Directive, means the assembly consisting of a single-use metal, glass or plastic container containing a compressed, liquefied or dissolved gas under pressure, with or without a liquid, paste or powder, and provided with a sampling device allowing the contents to be discharged in the form of solid or liquid particles in gas suspension, or in the form of a foam, paste or powder, or in the liquid state. Aerosols may be marketed or used for domestic, institutional, or industrial purposes.

Airborne Particles:

- PM - (particulate matter): fine particles (aerodynamic diameter less than 2.5µm).
- Ultra-fine particles (UFP less than 0.1µm in diameter): the size and composition of PM play a key role, the smaller they are, the more dangerous they are).

Respiratory risk: The use of ***two or more types of simultaneous aerosol sprays*** has been associated with asthma. Further analysis is needed to understand the underlying mechanismsthat may lead to a harmful effect of sprays on asthma.

Skin risk

- a hydrophobic coating could enhance skin penetration due to a greater affinity for stratum corneum lipids).
- pores are a way of penetration.
- the presence of sweat which can alter the surface of the particles.
- a study allowed the sensitization potentiality to be evaluated according to the ***concentration*** of an ingredient with known sensitizing power, present in a cleaning aerosol:it was retained that a concentration equal to or lower than a certain percentage (examples: 0.021% for benzisothiazolinone, 0.1% for cyclodextrins), did not induce skin sensitization.

There is also the question of whether the ***combination*** of the active ingredient with the fragrance ***substance*** during collection ***can cause sensitization***. This possibility is monitored inthe scientific literature.

7. Labelling and Communication

7.1 Designations allowing the identification of the specifications: The products defined in the present specifications and meeting its requirements benefit from the "***controlled allergens***" designation.

7.2 References to the control body: The reference to the control body is in the form and wording "***Approved HQE-A by the ARCAA allergists***".

7.3 Obligation of transparency on the composition: The display of the complete composition is done in accordance with Appendix VII of the ***EC regulation n°648/2004***:

All components are listed in ***INCI*** for preservatives, the list is subdivided into the following ranges, expressed in weight percentage:

- less than 5%
- 5% or more

Particles likely to cause nasal and bronchial deposits must be specified by their particle diameter(less than ***2.5µm***).

Allergenic or known sensitizing substances must appear on the label according to thethresholds defined by CLP EC 1272/2008.

In addition, benzisothiazolinone whose concentrations must appear on the label if they are higher than 0.021%, and cyclodextrins if the concentrations are higher than 0.1%.

Allergenic or known sensitizing substances must appear on the label. If there is a literature allowing to know the allergenic or sensitizing thresholds, as for example for Benzisothiazolinonefor concentrations higher than 0,021%, that is to say less than 210 ppm, and cyclodextrins if the concentrations are higher than 0.1%, that is to say 1000 ppm, an indication will be added, stating that the concentration of the agent(s) contained in the aerosol is lower than X times the dose known to be allergenic/sensitizing.

8. Good Practice Objectives Evaluated

Aim:
Holding the manufacturer accountable to ensure the absence of officially recognized allergenic or sensitizing substances and/or having a harmful effect on the distal bronchial airways.
Specify on the packaging:

- The substances officially recognized as allergens, when present above the threshold establishedby the CLP regulation EC 1272/2008.
- Specify the precaution of avoiding the simultaneous use of 2 or more airborne substances with potentially harmful health effects (see bibliography - Le Moual N & al 2012 Eur Resp J)
- Implement general preventive recommendations on good practices for the use of airborne substances in an indoor environment.
- Indicate in the instructions for use: the actions to be avoided and the recommendations for use(see Appendix IV)

9. Evaluation criteria

Questions to determine if the criteria are present

1. **The safety data sheet lists the complete composition of all components of the submitted product.**
   - Perfumers must provide the chromatography of the fragrances.
   - If the sheet indicates particles smaller than ***2.5 microns*** in diameter in aerosols, the product will not be allowed to apply for HQE-A approval and ARCAA "allergen controlled" labelling.
   - If an ingredient with sensitizing potential or known allergenic potential is present, it must be listed. The ingredient will not be listed on the label if it is below the thresholds that made the safety study on sensitizing potential
   - Preservers must be specified.

2. **The product submitted for labelling must guarantee good long-term performance to prevent users from having problems with a product that has been poorly preserved.**
   Aerosols require the use of ingredients that promote good preservation.
   These ingredients may or may not be substances officially classified as "preservatives". Should there be none, it will be necessary to know, under the seal of confidentiality, what preserves the product.
   The company is committed to ensuring that the safety data sheet is updated in accordance withEuropean regulations

3. **An instruction of good use is specified:** instructions for use, means of personal protection in the cade of TV advertising: do not sho misuse of the product

10. Data Collection Grid

Mark only one answer per product:

1 or O if the answer is YES

2 or N if the answer is NO

3 or N/A if not applicable

ID N°: ……..

Date: ……..

Time spent on this audit: ……

	QUESTION 1	**QUESTION 2**	**QUESTION**
	Do one or more additional sheets indicate the rating "above" or "below" 2.5 microns for airborne particles?	Do one or more of the additional sheets indicate the rating "above" or "below" the critical threshold for sensitizing ingredients?	Are the proper use of the products displayed mentioned?
1			
2			
3			
4			
5			

Total of 1			
Total of 2			
Total of 3			

	Observation per product
1	
2	
3	
4	
5	

11. Interpretation of Results

- **What do you think of the results? Are they in line with what is expected?**
- **How do you explain, for certain criteria, the possible differences observed?**
- **Do you think that corrective measures could be put in place? If so, which ones?**

12. Labelling levels

1 star (standard): particles larger than 2.5 microns in diameter, indication of the presence of allergen(s) or potentially sensitizing ingredient(s) on the label if the sensitizing thresholds are not known. If the allergenic/sensitizing thresholds are known, indication of the presence of the allergen(s) or ingredient(s) on the label, mentioning that the concentration of the agent(s) contained in the aerosol is less than X times the dose known to be allergenic/sensitizing.

2 stars (premium): particles larger than 2.5 microns in diameter, absence of allergen(s) at concentrations above a potentially sensitizing threshold if known.

3 stars: same as 2 stars, no emission of volatile organic compounds (as identified on the list bylatest knowledge).

APPENDICES

1. Appendix I

1.1 Potentially Allergenic Substances

- chloramine
- sodium hypocholrite
- quaternary ammoniums (cationic surfactants)
- ethalonamine
- chloracetamide

1.2 Mainly Allergenic Substances

- fragrances: 26 fragrance molecules - see appendix II
- d-limonene
- linacohol
- benzisothiazolinone and methylisothiazolinone
- alpha-hexyl-cinnamic aldehyde (HCA) propylene glycol
- L-menthone
- ethylene brassilate
- cyclodextrines
- formaldehyde
- phenoxy-ethanol
- glutaraldehyde
- lanoline colophane
- cocamidopropyl betaine (CAPB), also called Tegobetaine: contact allergy by amidoamine and 3-dimethylaminopropylamine (DMAPA)
- metabisulfite
- glucosides (decyl-, lauryl-, coco- and cetearylglucosides): allergological exploration by epidermotest with lauryl-glucoside representing the family

2. Appendix II: Allergenic Fragrances

- **The European CLP (Classification Labelling and Packaging) regulation EC1272/2008,revised annually, defines the thresholds for the labelling of allergenic ingredients, including allergenic fragrances**).
- **Exact composition of the standard Fragrance Mix (at 8%) called Fragrance Mix I** : 1% Amyl Cinnamal (Alpha Amyl Cinnamyl Aldehyde) - 1% Cinnamyl Alcohol - 1% Cinnamal (Cinnamic Aldehyde) - 1% Eugenol - 1% Geraniol - 1% Hydroxycitronellal - 1% Isoeugenol - 1% Oak Moss - 5% Sorbitan Sesquioleate (emulsifier)
- **Composition of Fragrance Mix II**: 10% Alpha-Hexyl-Cinnamaldehyde - 5% Farnesol - 5% Coumarin - 2.5% Lyral - 2% Citral - 1% Citronellol

NB: Plants are mixtures of these allergens, any plant used must be mentioned.

3. Appendix III: Volatile Organic Compounds (VOC)

- Aldehydes: formaldehyde, acetaldehyde
- Alkanes: methyl-cyclo-pentane
- Aromatics VOCs: benzene, toluene, ethylbenzene
- Esters: 2,2,4-trimethyl-1,3-pentanediol di isobutyrate
- Ethanol
- Chlorinated hydrocarbons: chloroetheneKetone
- Propylene glycol and glycol ethers
- Terpenes: d-limonene

4. Appendix IV

RECOMMENDATIONS FOR CLEANING AND PROPER USE OF AEROSOLS

odor sensors

Definition of Sanitation Work

Target Audience:

Professionals: indoor environment sanitation agents, community users private homes.

Relevant substances:

Some fragrances, preservatives, surfactants, quaternary ammoniums, ammonia, alkaline components, some acids, and solvents.

Use of fine-particle airborne products with cumulative effect.

Allergic Risks

- skin inflammation (hives, eczema, non-allergic irritation) especially if combined with the use of detergents when working in a humid environment.

- respiratory (nose, bronchi): aggravation of asthma if at least two aerosols are used simultaneously, persistence of rhinitis or chronic sinusitis.

What to do with aerosols:

- follow the instructions for use

- avoid:
  - Failure to follow manufacturer's instructions for use.
  - Repeated use of an aerosol in a confined environment with the presence of indoor pollution(mold, passive smoking, volatile organic compounds).

Additional preventive recommendations

- In case of people with ***known chronic respiratory pathology*** (COPD, asthma, rhinitis, and sinusitis):

- The simultaneous use of 2 or more aerosols is strongly discouraged, due to thedemonstrated risk of aggravating the respiratory pathology.

- If the person using the aerosols in a confined atmosphere has an **allergic skin condition:**

  It is advised to carefully rinse the exposed areas (face, neck, hands and forearms) or apply a skin-protecting cosmetic product to the exposed areas.

5. Appendix V: Bibliography

- 26 allergenic fragrance substances whose presence must be reported
- Benzisothiazolinone (B-003) patient information sheet Chemotechnique Diagnostics.
- Baeza A., Marano F « pollution atmosphérique et maladies respiratoires » (air pollutionand respiratory diseases) médecines/sciences 2007; 23: 497-501.
- Basketter D. et al – Hexyl Cinnamal: consideration of skin-sensitizing properties and suitability as a positive control – Cutaneous and ocular toxicology (2014) Early Online:1-5.
- Bédard A. et al – cleaning sprays – household helps an asthma among elderly women – Respiratory Medicine (2014) 108, 171-180.
- Bello A. Characterization of occupational exposures to cleaning products used for common cleaning tasks-a pilot study of hospital cleaners. Environmental Health 2009,8:11.
- Cui-Gua et al – Effect of long-term exposure to fines particulate matter on lung functiondecline and Risk of chronic obstructive pulmonary disease in Taiwan: a longitudinal, cohort study – Lancet Planet Health 2018; 2: e114-25.
- Cyclodextrines - background review for cyclodextrins used as excipients EuropeanMedicins Agency CHMP/333892/2013.
- Giménez-Arnau et al. Qu'est-ce qu'un parfum ? Diversité des allergènes et legislation européenne (What is a fragrance? Diversity of allergens and European legislation). Revue française d'allergologie 49 (2009) 279–285.
- Giorgio M-T Atousanté.com 2018: pénétration dans l'organisme des particules ultra-fines (penetration of ultra-fine particles into the body).
- Hervé-Bazin B. - «Les nanoparticules: un enjeu majeur pour la santé au travail ?» (Nanoparticles:a major issue for occupational health?) INRS, édition EDP sciences, 2007.
- Dittmar D et al – contact sensitization to hydroperoxides of limonene and linalool: results of consecutive patch testing and clinical relevance – Contact Dermatitis 2018;1-9.
- Duck Soo Lim - Determination of fragrance allergens and their dermal sensitization quantitative risk assessment (QRA) in 107 spray perfumes – Journal of Toxicology and Environmental Health,Part A (2018).
- Gérault C et al – dermatoses liées aux produits de nettoyage: clinique, aspects étiologiques par profession (dermatoses related to cleaning products: clinical and etiological aspects by profession)- GERDA.
- Hahn S. et al - consumer exposure to biocides - identification relevant sources and evaluation ofpossible health effects – Environmental health 2010, 9:7.
- Le Moual N. et al Domestic Use of cleaning sprays and asthma activity in females – Eur Respir J(2012) 40:1381-1389.
- Lévy et al – tolerance to exposure of essential oils in patients with allergic asthma – Journal ofasthma DOI:10.1080/02770903.2018.
- McGinty D. et al - Fragrance material review on ethylene brassilate – Food

and ChemicalToxicology 49 (2011) 5174-5182.
- Nath Nell Som et al – Contact allergy to hydroperoxides of linalool and d-limonene in e USpopulation - American Contact Dermatitis Society 2017.
- Nurmatov U et al – Volatile organic compounds and risk of asthma and allergy: a systematicreview – Eur Respir Rev 2015; 24: 92-101.
- Ponyai G. – Patch test with fragrance-mix II and its components – American Contact DermatitisSociety 2012.
- Rosenberg N. - Non-infectious occupational respiratory diseases caused by humidifiers/airconditioners - Occupational Allergy-Pneumology Form TR44 - INRS documents for the occupational physician 4th quarter 2008 n°116, 533-542.
- Rosenberg N. – Occupational respiratory diseases in cleaning staff - Occupational allergology- pneumology sheet TR52 - INRS documents for the occupational physician 4th quarter 2011 n°128,683-694.
- Scheman A. – European Directive Fragrances in Natural Products – American Contact DermatitisSociety 2014.
- Siracusa A.et al. Asthma & exposure to cleaning products – a EAACI task force consensusstatement – Allergy 2013;68:1532-1545.
- Su F.C. et al – Exposure to Volatile organic compounds among healthcare workers: modeling the effect of cleaning tasks and product use – Annals of work exposures and health, 2018, vol.XX, NoXX.
- Vizcaya D – Cleaning products and short-term respiratory effects among female cleaners withasthma – Occup Environ Med 2015; 0:1-7.
- Wieck S. et al - Fragrance allergens in household detergents – Regulatory Toxicology and Pharmacology – Volume 72, Issue 1 – june 2015.
- Wlodek C. et al – Recommendation to test limonene hydroperoxides 0.3% and linalool hydroperoxides 1.0% in the British baseline patch test series – British Journal of Dermatology(2017) 177, pp 1708-1715.