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VIGILANCE FOR CHEMICALS PRODUCTS

***Do-It-Yourself or Don't do it
yourself: beware of
certain recipes*** P. 2

VIGILANCE FOR PLANT INPUTS

**Unauthorised plant protection
products are still in circulation
in France** P. 6

COSMETOVIGILANCE

**"Brazilian" hair straightening
products: risk of acute kidney
injury caused by glyoxylic acid** P. 10

NUTRIVIGILANCE

**Acute kidney injury associated with
consumption of the slimming drink
Matcha slim®** P. 13

Do-It-Yourself or Don't do it yourself: beware of certain recipes



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"Home-made" or Do-It-Yourself (DIY) means preparing a product at home rather than buying it from a retailer. When it comes to detergents, weedkillers or cosmetics, some preparations are dangerous and have led to calls to poison control centres. Poisoning can occur during both preparation and use of the DIY product. The most severe cases can cause bronchospasm or serious burns, and may have after-effects. The DIY recipes listed in this article should never be used.

WHAT IS DO-IT-YOURSELF?

"Home-made" or Do-It-Yourself (DIY) refers to the practice of preparing a product at home, to use immediately or to store for later, instead of buying it ready to use from a retailer. Consumers are attracted to this practice as it allows them to save money (by buying ingredients in bulk), preserve the environment (less household waste), control the product ingredients and learn new skills.

DIY most often concerns cleaning products for home and garden, as well as cosmetics. The recipes available on social media, websites and in books recommend buying the ingredients commercially or even sourcing them from the wild (such as ivy or ash for DIY laundry detergent).

However, some recipes pose risks, for several reasons:

- use of ingredients that are toxic to the person preparing and/or using the product,
- incorrect or imprecise dosages for certain ingredients (e.g. "add a pinch" or "add a spoonful of..."),
- uncertainties about the exact nature of the ingredients to be added (e.g. "polymer" or "soda"),
- mixtures of ingredients that can potentially cause dangerous chemical reactions,
- no information on what containers are unsuitable for prepared DIY products: for example, a bottle without a secure cap (whereas there would be one on a commercial product), use of old food packaging (water or soft drink bottle) or a container without a label making it impossible to determine its contents, which can lead to very serious accidents if accidentally ingested, particularly by children [1],
- storage problems and possible microbiological contamination.

CASES OF POISONING INVOLVING DIY PRODUCTS

"Home-made" products were responsible for 260 calls to poison control centres (PCCs) between 1 January 2016 and 17 November 2024. Almost half of these calls involved DIY products for the home or garden: detergents, surface cleaners, insecticides and weedkillers.

Other calls concerned DIY hygiene and cosmetics products¹ (soap, shampoo, topical cleanser).

The individuals calling the PCCs had been exposed through contact with raw materials, or with work surfaces and utensils contaminated during preparation, or through inhalation of vapours or gases emitted during manufacture. The majority of poisoning cases were minor, mostly involving signs of skin or eye irritation, as the individuals had typically prepared the recipes without wearing gloves or protective glasses.

However, more severe symptoms were also reported, such as bronchospasm when making weedkiller, and serious chemical burns to the skin or eyes when handling corrosive substances such as "soda" to make soap (see "What do we really mean by soda, bicarbonate, etc.?" below).

More than a third of the calls concerned accidents involving children aged between one and six years, reflecting parents concern when they had prepared DIY products with their children nearby or had let them help with the recipe.

EXAMPLES OF "DON'T DO IT YOURSELF"

Here is a non-exhaustive list of recipes that should never be made at home because of the serious health risks.

GARDEN OR HOME MAINTENANCE PRODUCTS

Weedkiller or cleaner based on a mixture of bleach and vinegar: suggested as a "home-made weedkiller" or to be applied successively to clean and descale the bathroom, mixing these two ingredients together causes the sudden release of toxic chlorine gas. This "chlorine shock" is intensified by heat (addition of hot water) and the mixing of concentrated products [2].

It irritates the respiratory tract, causing breathing difficulties, bronchospasm and possibly acute lung oedema. Patients often require hospitalisation, and can be left with potentially permanent after-effects such as reactive airway disease (asthma induced in a person who was not initially asthmatic).

In addition, vinegar is irritating to the eyes and skin at any concentration, and can cause serious burns at concentrations above 25%.

Ammonia- and bleach-based descaler: recommended as a bathroom cleaner and descaler, the use of ammonia (liquid) followed by bleach releases chloramines that are toxic to the lungs, causing the same symptoms as chlorine (see above) and also requiring emergency treatment. Successive application of these products in an unventilated or poorly ventilated room increases exposure to these chloramines and the risk of severe respiratory irritation. Ammonia is also corrosive to the skin and eyes, and can cause serious burns.

Ash- or ivy-based detergent: ash is used for its lime and ivy for the saponins contained in the leaf cuticle.

However, ash is corrosive to the skin and eyes, and saponins, handled when preparing "home-made" detergent, are surfactants causing contact dermatitis that can be severe depending on the concentration.

BAIT FOR PEST CONTROL

European regulations on biocides require the use of secure bait boxes for rodenticides containing anticoagulants. This ensures that users, children or pets never come into contact with the active substances. Recipes explaining how to make your own bait for pests (insects, mice), by incorporating an active substance such as al-phachloralose in attractive foods such as condensed milk, bread, sugar granules or eggs, do not therefore comply with the regulations. Bait placed on the ground can be accidentally ingested by children or pets. This has already led to a number of deaths [3].

Moreover, some substances should not be handled by consumers because of their long-term toxicity, such as boric acid, which is toxic to fertility and embryo-foetal development².

SLIME

To make this elastic putty that can be kneaded ad infinitum, numerous tutorials on the internet suggest the misuse of products such as detergents, shaving foam and glues containing allergenic preservatives such as isothiazolinones. Preparation of home-made putty and repeated, prolonged handling can cause irritation, burns and sometimes severe allergies to the hands and nails.

ANSES warned about the risk to children posed by these home-made preparations back in 2018 [4].

In addition, some recipes recommend the use of eye drops containing boric acid at concentrations above therapeutic levels, despite this substance being toxic to fertility and embryo-foetal development, as mentioned above.

COSMETICS

Zinc oxide-based cosmetics: the maximum regulatory concentration of zinc oxide in ready-to-use cosmetics must not exceed 25%, a threshold that is not always adhered to in DIY recipes. In addition, its use in spray cosmetics is strictly prohibited in Europe under Regulation (EC) No 1223/2009, due to its pulmonary toxicity when the particles are at the micrometre scale. Uncertainties persist as to its toxicity in nano form.

False nail glues containing cyanoacrylates: some recipes recommend using a "cyanoacrylate base", an ingredient that may refer either to ethyl cyanoacrylate (or ethylacrylate), for which the quantities handled should be very limited because of its toxicity (skin, eye and respiratory

¹ Hand sanitiser gels and solutions were not taken into account because the occurrence of DIY accidents involving these products was limited to the period of the COVID-19 pandemic.

² Regulation (EC) No 1272/2008 on classification, labelling and packaging of substances and mixtures.

irritation, skin allergen), or to methyl cyanoacrylate (or methylacrylate), which triggers exothermic chemical reactions that can cause thermal burns if splashed directly on the skin.

Furthermore, whether the glue has been purchased from a retailer or is a DIY preparation, it must be handled with extreme care, as any splashes on fabric clothing, particularly cotton, cause a violent exothermic reaction that can result in third-degree burns to the skin under the fabric [5].

Soaps: some home-made soap recipes recommend following the saponification process, i.e. transforming a fat or lipid into soap using a strong base. The base used in cold saponification is sodium or potassium hydroxide, both of which are highly alkaline and intensely corrosive. They must therefore be handled with great care, using suitable protective equipment (gowns, gloves, glasses) and in a well-ventilated area, as they also give off dangerous vapours. Contact with the skin rapidly causes a potentially serious and deep chemical burn, while splashes in the eyes can cause serious injury, leading to blindness.

WHAT DO WE REALLY MEAN BY SODA, BICARBONATE, ETC.?

Some DIY recipes call for the use of "soda". This white crystalline powder actually covers a number of different chemicals with regulatory statuses ranging from classification as corrosive to skin to no classification at European level. However, the information on retail packaging about the nature of the "soda" is sometimes imprecise, which increases the risk of accidents.

Four substances are grouped together under the generic term "soda":

- Sodium hydroxide (NaOH), also known as caustic soda, lye or anhydrous soda, comes in the form of powder, microbeads, tablets or flakes. It is a strong base with a pH > 12, corrosive to the skin and eyes at concentrations above 5% and highly irritating at lower concentrations, which can cause serious accidents. Its corrosivity can be fatal after accidental ingestion. This substance is recommended for the preparation of "home-made" drain unblockers and solvents (e.g. for stripping wallpaper), and also as a saponifying agent (see above).
- Anhydrous sodium carbonate (Na_2CO_3), also known as calcined soda, soda crystals or soda ash, is a weak base with a pH of 11-12. It is highly irritating, especially to the eyes. It is recommended for making tablets for dishwashers and washing machines.
- Sodium carbonate peroxide ($2 \text{Na}_2\text{CO}_3 \cdot 3 \text{H}_2\text{O}_2$), also known as sodium percarbonate or percarbonate of soda, can be purchased in powder or microbead form. It is highly irritating to the eyes and to the digestive tract if ingested by mistake. It is used as a

bleaching agent and disinfectant for equipment.

- Sodium hydrogen carbonate (NaHCO_3), also known as bicarbonate of soda or baking soda, with a pH of 8-9, does not have the same corrosive and irritant properties as the substances above. It is used as a baking powder and a whitening agent in the manufacture of mouthwashes, dental abrasives and household products.

CONCLUSION

Extreme caution is needed when preparing "home-made" everyday consumer products involving mixtures of chemicals, both during handling and use. Certain recipes must never be used, as they can cause serious poisoning with after-effects, and may even be fatal. Many specific accidents can occur during handling, with the risk of toxic substances being splashed or inhaled. Ingredients handled in their pure state can be more dangerous than when mixed in a recipe. Children may accidentally gain access to them while the product is being prepared.

Once a product has been prepared and packaged, a failure to label it, the misleading use of a food container or a container that is unsuitable for the product's chemical nature can all be responsible for serious accidents, particularly accidental ingestion by children.

Despite all the obvious benefits, do-it-yourself can also create health risks. Vigilance is needed when deciding between DIY and a ready-to-use manufactured product sold in a suitable container.



Alain Aymard (ANSES expert), Camille Paradis (Bordeaux PCC), Cécilia Solal (ANSES)

FIND OUT MORE

[1] ANSES. 2024. Transferring household products to unsuitable containers is a very poor practice responsible for serious accidents every year Vigil'Anses 22. https://vigilanses.anses.fr/sites/default/files/VigilAnses_N22_Decantingproducts.pdf

[2] ANSES. 2023. Never use a mixture of bleach and vinegar for weed control. Vigil'Anses 19. https://vigilanses.anses.fr/sites/default/files/VigilAnsesN19_June2023_Weedcontrol.pdf

[3] ANSES. 2021. Banned rat poison causing death and serious poisoning in children in France. Vigil'Anses 15. https://vigilanses.anses.fr/sites/default/files/VigilAnsesN15_November2021_Ratpoison.pdf

[4] ANSES. 2018. Avoid "home-made" slime! Vigil'Anses 6. https://vigilanses.anses.fr/sites/default/files/VigilAnsesN6_October2018_Slime.pdf

[5] ANSES. 2021. Nail glues: risk of severe thermal burns. Vigil'Anses 13. https://vigilanses.anses.fr/sites/default/files/VigilAnsesN13_March2021_Glue.pdf

Unauthorised plant protection products are still in circulation in France



ANSES has analysed exposures and poisonings due to plant protection products, recorded by poison control centres from the beginning of 2017 to the end of 2022 and focusing on active substances that are not, or are no longer, approved in the European Union.

Certain products are still a regular source of poisoning, despite in some cases having been withdrawn from the market more than 20 years ago.

This is due to the stockpiling of old products that were once authorised in France, or imports of products that are banned here but authorised in other countries, and sometimes misused.

Poison control centres (PCCs) in France regularly record cases of exposure to plant protection products (PPPs) containing non-approved active substances¹, which may or may not have been authorised in France in the past. Moreover, some exposure to fraudulently obtained and misused non-PPPs in Europe has been fatal. There have also been cases of suicide involving misuse of PPPs.

A study of these exposures over the period 2012-2016² suggested that, while they fell in number as marketing authorisations were withdrawn in mainland France, this was less the case in the overseas territories.

IS THE SITUATION IMPROVING?

To monitor developments in the situation, ANSES looked at exposure to products containing at least one non-approved active substance as of 31 December 2013, focusing on cases recorded by PCCs between 1 January 2017 and 31 December 2022.

The reason for choosing 2013 as the cut-off date was to ensure that the first year of the study period (2017) was long enough after when the products were withdrawn from the market. Four years is sufficient time for consumers to become aware of the ban and to take the steps it implies: no longer keeping or using these products. Professionals were able to take them to collection points listed on the ADIVALOR³ website, while individuals could take them to waste disposal centres, or to garden centres or DIY shops, some of which collect this type of waste free of charge.

DICHLORVOS THE ACTIVE SUBSTANCE MOST FREQUENTLY INCRIMINATED

During the study period, the PCCs registered 599 dossiers relating to 64 non-approved active substances found in 150 different plant protection products.

The main products involved were insecticides (60%), herbicides (19%) and mole killers (5%).

Dichlorvos (an organophosphate insecticide and acaricide) was the most commonly cited active substance (34%), followed by aldicarb (a carbamate insecticide, acaricide and nematocide) (10%), strychnine (a mole killer) (7%) and paraquat (a herbicide) (5%).

¹ [Twenty questions about ANSES and the authorisation of plant protection products](#)

² https://vigilanses.anses.fr/sites/default/files/VigilAnsesN7_February2019_UnauthorisedPP.pdf

³ <https://www.adivalor.fr/>

Regarding exposure to dichlorvos (n=204), the results revealed misuse of the product SNIPER 1000 EC DDVP®. Almost 82% (n=166) of exposures to dichlorvos involved this product, which is sold mainly in Africa for use as a plant protection product in agriculture, but is then imported illegally and misused as a biocide against bed-bugs and cockroaches. This product was the subject of a specific alert in 2023⁴.

REGIONAL CHARACTERISTICS

France's overseas territories (limited here to Guadeloupe, Martinique, French Guiana, Reunion Island and Saint-Pierre-et-Miquelon), as well as Île-de-France, Hauts-de-France and Normandy were the regions most affected by these exposures/poisonings.

A number of regional specificities emerged from this study:

- Dichlorvos was involved in four out of five cases in the Île-de-France region, half the cases in Provence-Alpes-Côte d'Azur and one third in the Grand-Est region.
- Aldicarb was the main cause of exposure in Hauts-de-France (58%), strychnine in Auvergne-Rhône-Alpes (30%), and paraquat (59%) and aldicarb (25%) in the overseas territories.
- French Guiana was the region most affected by paraquat poisoning. This overseas territory has land borders with South American countries such as Suriname, where paraquat is still available without legal restrictions and where people from French Guiana can obtain supplies. When the country of import was stated in the study, the paraquat came from Suriname.

Products imported illegally or kept in stock

Information on the origin of the products was provided in only 19.6% of cases (n=119). Around half of these concerned dichlorvos purchased in France from market street vendors, in shops or on the Internet.

In a third of these cases, the product had been purchased when it was still authorised in France and then stored. This was particularly true of products containing strychnine or aldicarb.

Lastly, in the remaining cases, the product had been supplied by a third party but it was unknown how they had obtained it.

Varying circumstances of exposure depending on the active substance

Accidental exposure accounted for three quarters of cases: everyday accidents, DIY accidents, or lack of risk perception⁵ in young children or adults with mental disorders.

The remaining one-quarter of cases concerned suicidal behaviour, mainly involving aldicarb, strychnine, paraquat or carbofuran.

The intentional poisoning was more severe than the accidental poisoning. In fact, almost half (59 out of 119) of the cases of deliberate poisoning were of moderate or high severity, compared with 3% (14 out of 437) of the accidental poisonings. All 15 deaths were suicides. The active substances implicated most often in the 55 most serious poisonings, i.e. those causing severe or life-threatening symptoms or death, were aldicarb (n=25), strychnine (n=10) and paraquat (n=8).

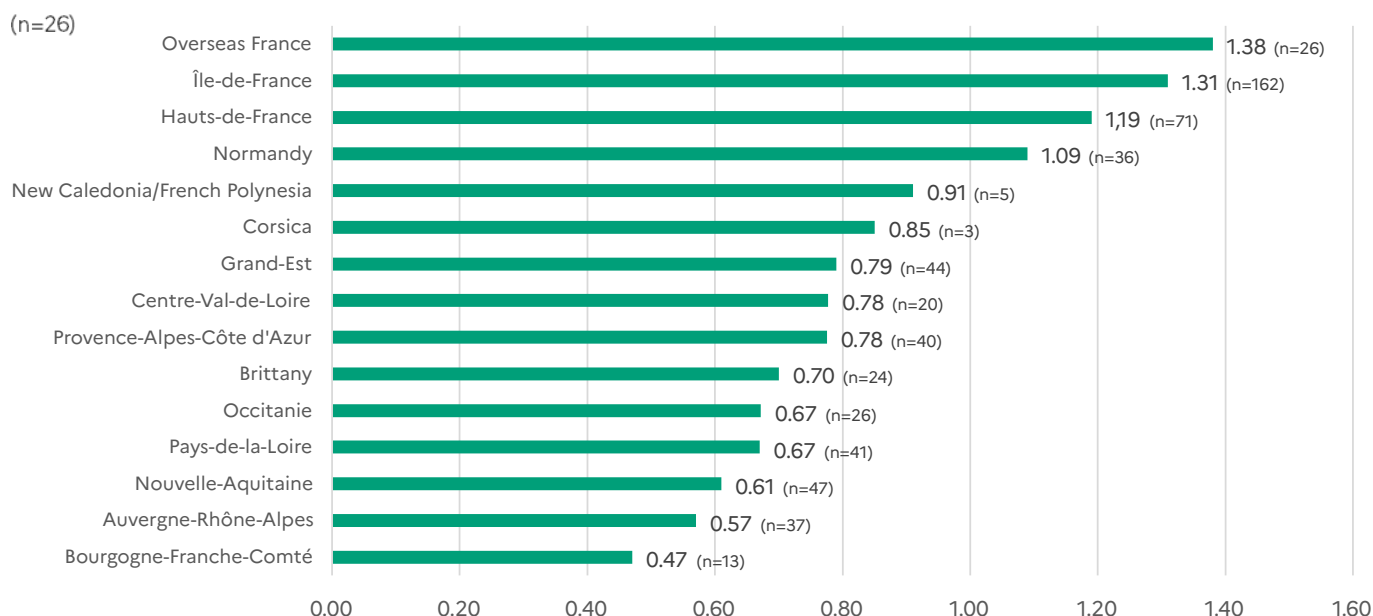


Figure 1 -Regional incidence of cases reported to poison control centres expressed as number of cases per 100,000 inhabitants
(Source SICAP: 1 January 2017 - 31 December 2022)

⁴ https://vigilanses.anses.fr/sites/default/files/VigilAnses_N21_EN-bannedproducts.pdf

⁵ A lack of risk perception is defined as an accidental exposure circumstance due to the patient's inability to analyse the potential danger of the situation.

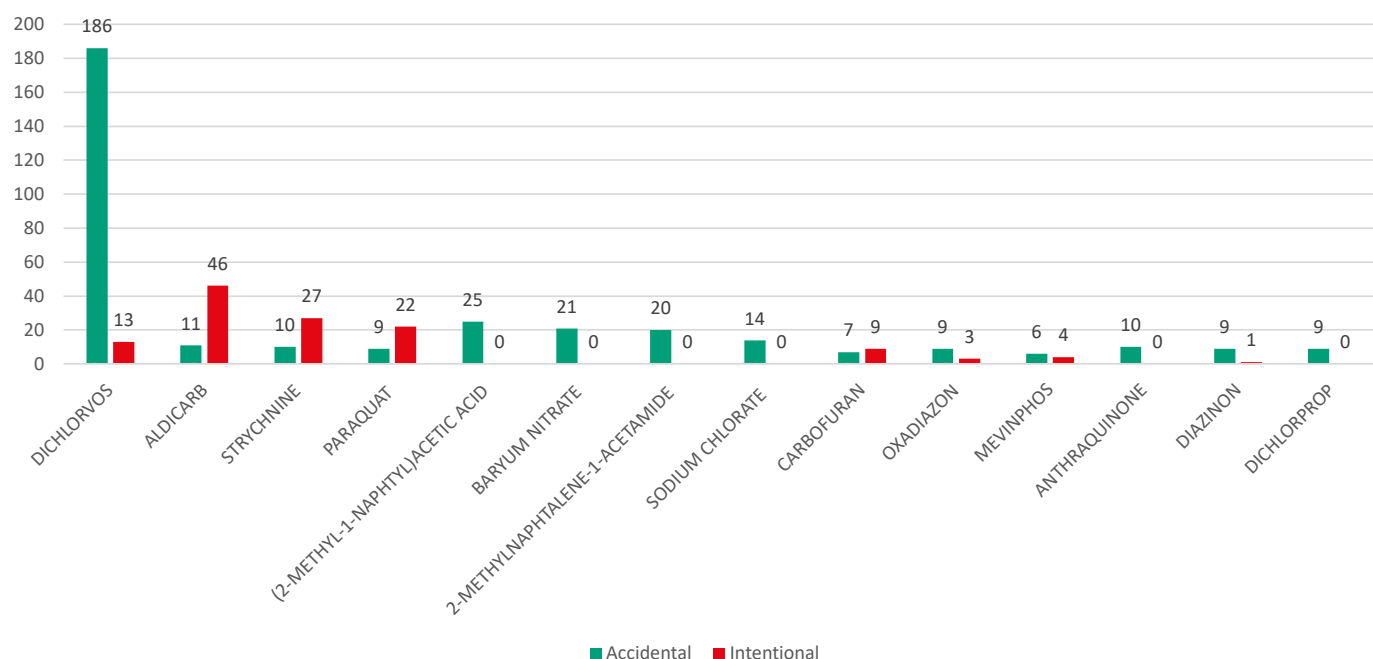


Figure 2 - Circumstances of exposure for the 14 active substances most often incriminated, excluding dichlorvos (source: SICAP)

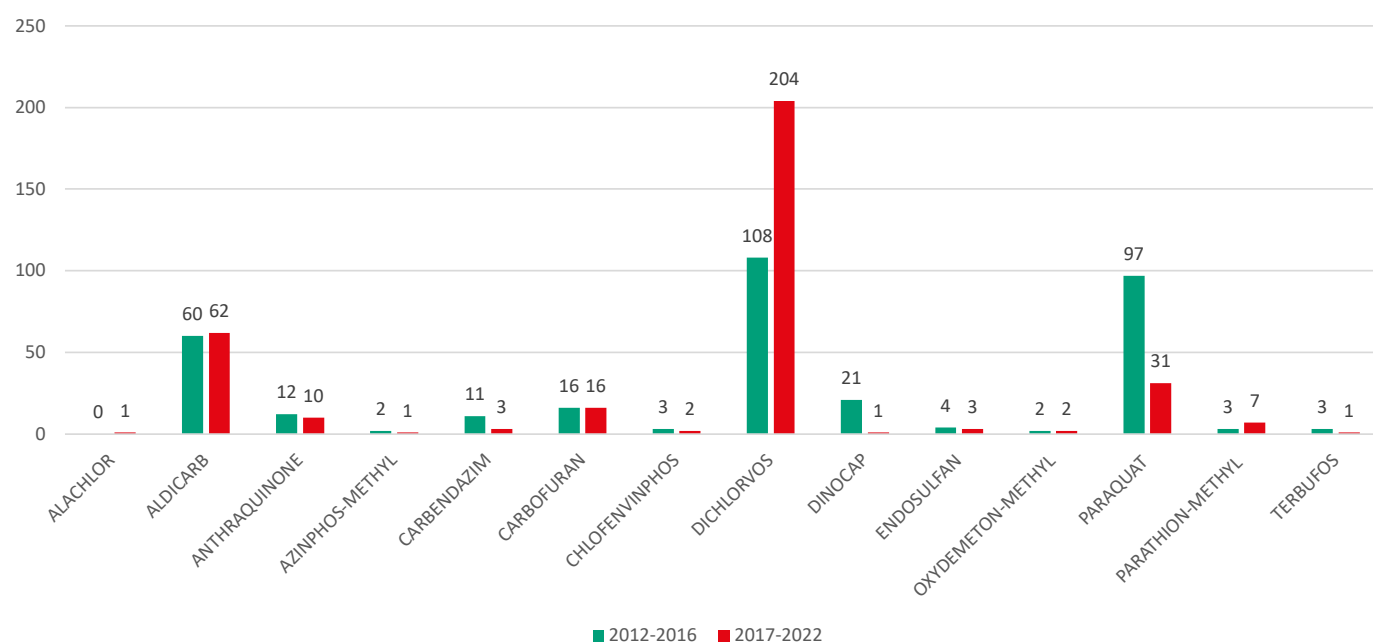


Figure 3 -Trend over time of cases due to the 14 active substances common to both studies

Results stable compared with the previous study

The study of cases reported from 1 January 2012 to 31 December 2016 had identified 408 human exposures, with or without symptoms, to plant protection products containing active substances not approved in Europe, with an average of 82 cases per year. The active substances targeted by this first study were those listed in the notice issued by the Ministry of Agriculture and Fisheries in the Official Journal of 28 March 2008⁶, i.e. 21 active substances.

In the second study, despite there being three times as many active substances (64 compared with 21), the number of cases only increased by a factor of 1.5: 599 cases versus 408. However, in both studies, the active substances most frequently incriminated were dichlorvos, paraquat and aldicarb.

The number of cases of exposure to the 14 substances common to both studies was stable, with the exception of dichlorvos and paraquat. Cases of exposure to dichlorvos reported to PCCs increased sharply as a result of SNIPER 1000 EC DDVP[®] being misused as a biocide. In contrast, exposure to paraquat, which has not been approved since 2007, fell by 68% between the two periods.

Aldicarb, which lost its EU approval over 16 years ago, was still implicated in around 10 PCC calls each year, particularly in Hauts-de-France. In this region known for potato and sugar-beet growing, aldicarb products were widely used and stocks may still remain. In the French Caribbean, the misuse of aldicarb as a rodenticide on banana crops continued until at least 2004⁷. The cases reported in Guadeloupe and Martinique suggest stockpiling of products.

In most cases, for the two periods, the deaths and severe life-threatening symptoms were associated with exposure to paraquat, aldicarb or carbofuran.

The 2012-2016 study had already pointed out the existence of illegal imports, such as dichlorvos in mainland France and paraquat in French Guiana.

It had also highlighted the continued use in the professional agricultural sector of certain fungicides such as anthraquinone, an active substance also found in the new study.

CONCLUSION

Despite some active substances not having had their European approval renewed for more than 20 years, they are still found in France, mainly as a result of illegal imports of plant protection products that can no longer be marketed in the EU but that are sold on French soil and then misused.

As a reminder, since 2019, the Labbé Act has banned the use of plant protection products by amateur gardeners, with the exception of biocontrol products, low-risk products and products authorised for use in organic farming bearing the words "Authorised for use in gardens".



**Chloé Greillet (ANSES), Patrick Nisse (Lille PCC)
and Florent Batttefort (Toulouse PCC)**

FIND OUT MORE

ANSES (2018). Exposure to plant protection products containing unauthorised active substances in metropolitan France and the overseas territories. Retrospective study of observations recorded by the French poison control and toxicovigilance centres and veterinary poison control centres (2012-2016). Maisons-Alfort: ANSES, 44p.

ANSES (2019). Pesti'Home study. National survey on domestic uses of pesticides. ANSES's recommendations. Study report. Maisons-Alfort: ANSES, 282p.

ANSES (2023). Exposure to SNIPER 1000 EC DDVP[®]. Retrospective study of observations recorded by the French poison control and toxicovigilance centres from 1 January 2018 to 30 June 2023 (Request No 2023-AUTO-0160). Maisons-Alfort: ANSES, 28p.

ANSES (2024). Exposure to plant protection products containing non-approved active substances. Retrospective study of observations recorded by the French poison control and toxicovigilance centres, Phyt'attitude and the Western France animal and environmental poison control centre from 1 January 2017 to 31 December 2022. (Request No 2024-AUTO-0049). Maisons-Alfort: ANSES, 52p.

⁶ <https://www.legifrance.gouv.fr/jorf/id/JORFTEXT000018453651>

⁷ Ragoucy-Sengler C, Tracqui A, Chavonnet A, Daijardin JB, Simonetti M, Kintz P, Pileire B. Aldicarb poisoning. Hum Exp Toxicol. 2000;19(12):657-62.

"Brazilian" hair straightening products: risk of acute kidney injury caused by glyoxylic acid



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Following several cases reported in France and other countries, studies have shown that glyoxylic acid can be transformed into calcium oxalate and cause acute kidney injury. In January 2025, ANSES confirmed a highly likely link between this ingredient and this adverse effect, recommending a risk assessment at European level. Pending the introduction of any restrictions, the health authorities recommend avoiding these products and watching out for any unusual symptoms appearing after a hair-straightening procedure.

AN ALERT TO THE COSMETOVIGILANCE SCHEME

In January 2024, ANSES, which had been in charge of the cosmetovigilance scheme since the beginning of that month, received a report from a nephrologist of a case of acute kidney injury supposedly linked to the use of a hair-straightening product.

The report concerned a young woman who had experienced three episodes of acute kidney injury over a three-year period, each time a few hours after having her hair straightened in a hairdressing salon.

The products used for the first two treatments could not be identified, but for the third, a study of its composition showed the presence of glyoxylic acid.

Glyoxylic acid is found in products used for the "Brazilian" hair straightening procedure. It replaces formaldehyde, which was used in cosmetics, particularly hair-straightening products, until 2019. It was then banned due to its classification as a carcinogenic substance in 2014¹ under the European CLP Regulation. Following its ban, the industry developed alternatives, including glyoxylic acid.

SERIOUS ADVERSE EFFECTS THAT ARE ATTRACTING GROWING ATTENTION

Les The nephrologists who treated this patient published their findings in a scientific journal². They established a causal link between the acute kidney injury and the glyoxylic acid, based on observations of the toxic renal effect of glyoxylic acid in mice and similar human cases identified in Israel.

Following this alert, ANSES issued an internal request to carry out a review of knowledge of the renal toxicity of glyoxylic acid in hair-straightening products and to determine whether it was necessary to regulate the conditions of use of this substance.

¹ CLP Regulation <https://eur-lex.europa.eu/legal-content/FR/TXT/PDF/?uri=CELEX:02008R1272-20170101>

² Robert T, Tang E, Kervadec J, Desmons A, Hautem JY, Zaworski J, Daudon M, Letavernier E. 2024b. « Hair-straightening cosmetics containing glyoxylic acid induce crystalline nephropathy ». *Kidney International* 106(6):1117-1123. <https://doi.org/10.1016/j.kint.2024.07.032>.

HEALTH ALERT FOLLOWING NEW CASES IN FRANCE

In August 2024, ANSES was informed of two new reports of acute kidney injury in consumers who had had their hair straightened.

These additional cases led ANSES, the Directorate General for Health (DGS) and the Directorate General for Competition, Consumer Affairs and Fraud Control (DGCCRF) to issue an alert³ in October 2024, without waiting for the publication of the work undertaken by ANSES following the internal request. The priority was to inform the public and healthcare and hairdressing professionals about the serious adverse effects that could occur following the use of hair-straightening products containing glyoxylic acid.

The reports received concerned women aged between 25 and 45 years who had experienced symptoms such as headaches, lower-back pain, abdominal pain, nausea, sweating, discomfort, fatigue, dizziness, vomiting and excessive thirst in the hours following their hair-straightening procedure. Their blood tests showed a significant increase in blood levels of creatinine, a biological marker of kidney injury. No other explanatory cause was found. Progression was favourable in all cases, following oral or intravenous hyperhydration in hospital and a hospital stay of several days in some cases.

ADVICE FOR CONSUMERS AND HEALTHCARE PROFESSIONALS

Do not use hair-straightening products containing glyoxylic acid

In the event of unusual symptoms (lower-back pain, tiredness, nausea, etc.) during application of the product or in the hours following a hair-straightening procedure:

- see a doctor or call a poison control centre⁴, and mention the "Brazilian" hair straightening procedure;
- report the incident on the Ministry of Health's adverse health events reporting portal <https://signalement.social-sante.gouv.fr/>.

FEARS CONFIRMED BY THE SCIENTIFIC LITERATURE

ANSES's analysis of the scientific literature identified data from epidemiological studies establishing a link between the use of hair-straightening products that may contain glyoxylic acid and the occurrence of acute kidney injury within a few hours. These studies suggest that glyoxylic acid, when applied to the scalp, can penetrate the body and be transformed into calcium oxalate. This oxalate can form crystals in the kidneys, leading to potentially severe kidney injury.

An Israeli team identified 26 similar cases occurring between 2019 and 2022. In some of them, renal biopsies revealed the presence of calcium oxalate crystal deposits. Eleven patients were exposed to keratin-based hair-straightening products containing "glycolic acid derivatives" according to the labelling. For the other patients, the type of hair-straightening product used was not identified, but the authors pointed out that the majority of hair-straightening products available on the Israeli market contain glycolic acid derivatives.

In Switzerland, the case of a woman in her forties who developed acute kidney injury after a hair-straightening procedure was published in 2024. The renal biopsy had shown calcium oxalate crystal deposits. The composition of the product used remains unknown.

Lastly, experimental tests carried out on rodents exposed to creams containing glyoxylic acid have confirmed the nephrotoxic role of glyoxylic acid via the skin. Scientific data have also demonstrated the formation of oxalate crystals from glyoxylic acid.

TAKING ACTION TO PROTECT THE PUBLIC, IN FRANCE AND THROUGHOUT THE EUROPEAN UNION

In January 2025, following its analysis of the literature data, ANSES published an opinion⁵ concluding that glyoxylic acid very likely played a causal role in the onset of the acute kidney injury.

The Agency believes that a risk assessment is needed at European level in order to rule on restricting or even banning the use of this substance in hair care products.

ANSES also calls for the recommended risk assessment to examine more broadly the issue of cosmetic substances (found in hair products and other cosmetic products) that can be metabolised into glyoxylic acid, causing kidney effects.

³ <https://www.anses.fr/en/content/warning-risks-hair-straightening-products-containing-glyoxylic-acid>

⁴ Single number +33 (0)1 45 42 59 59

⁵ <https://www.anses.fr/fr/system/files/REACH2024AUTO0079.pdf>

In March 2025, ANSES presented its work to the European Commission's Cosmetics Working Group, bringing together Member States and stakeholders, and requested that glyoxylic acid be assessed by the Scientific Committee on Consumer Safety (SCCS).

CONCLUSION

Pending any regulatory measures and further studies, it is preferable to use hair care products that do not contain glyoxylic acid.

The reported cases highlight the need for increased vigilance when using these products.

The health authorities invite consumers to report any adverse effects associated with these products – and with cosmetics in general – on the adverse event reporting portal of the Ministry of Health⁶. Reporting is essential to better understand the risks and protect consumers.



Elodie Lontsi and Pauline Guillou (ANSES)

⁶ <https://signalement.social-sante.gouv.fr/>

Acute kidney injury associated with consumption of the slimming drink Matcha slim[®]



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ANSES received a report of life-threatening acute kidney injury following consumption of Matcha Slim[®] by a man with chronic kidney disease.

Given the severity of the adverse effect described, due to the intake of oxalates, ANSES wished to bring this case to the attention of the public and healthcare professionals.

It recommends that individuals with risk factors such as chronic kidney disease, diabetes or intestinal transit disorders limit their consumption of foods and drinks containing oxalates.

As part of the nutrivigilance scheme it has been running since 2009, ANSES received a report of acute kidney injury potentially associated with consumption of the product Matcha Slim[®] marketed by Laboratório FranceDiet. This slimming product mainly contains green tea (*Camellia sinensis*), vitamin C and taurine. ANSES published an opinion detailing this case [1].

THE ALERT

The report concerned a man in his sixties, a smoker for 45 years, on medication for insulin-dependent diabetes and chronic kidney disease, and an occasional alcohol drinker. In 2022, he began taking Matcha Slim[®]. This product comes in the form of a powder to be dissolved in water. He took a spoonful of this preparation each morning. Nine days later, he was admitted to the hospital emergency department with abdominal and epigastric pain, associated with respiratory difficulties.

Biological tests revealed acute kidney injury, with elevated serum creatinine levels¹ (770 µmol/L, i.e. four times his usual level, which was already high because of his illness), hyperkalaemia² (5.9 mmol/L) and hyperoxaluria³ (60 µmol/mmol urine creatinine). Tests (abdominal CT scan, MRI and Doppler ultrasound of the renal arteries) did not support obstructive nephropathy, nor was there any evidence of acute kidney injury of functional origin, as the ratio of urinary [Na] to urinary [K] was greater than 1. The tests also ruled out an autoimmune disease. A renal biopsy showed acute tubulointerstitial damage due to precipitation of oxalate crystals⁴. The patient began haemodialysis⁵ sessions, which continued three times a week when he was discharged after 11 days in hospital.

Analyses carried out by the hospital's pharmacology and toxicology laboratory ruled out any adulteration of the product.

¹ Blood creatinine concentration. The norm is between 110 µmol/L and 140 µmol/L.

² Blood potassium concentration that is too high. The norm is between 3.6 mmol/L and 4.5 mmol/L.

³ Excessive urinary excretion of oxalate. Laboratory norms not provided.

⁴ Kidney injury with oxalate deposits.

⁵ A renal replacement therapy technique.

LINK TO CONSUMPTION OF THE PRODUCT

The causality of the product in the occurrence of the acute kidney injury was assessed using the method developed for the nutriviigilance scheme [2]. As a reminder, causality is calculated from two parameters: the chronological concordance of the adverse events with consumption of the product, and the search for another possible cause that would explain the adverse effects. Chronological concordance is examined on the basis of the time to onset of the effects, their progression and whether or not the adverse effects reappear upon reintroduction of the product.

For the Matcha Slim® product, the onset time for the adverse effect was found to be "compatible". Progression was described as "suggestive", the highest level of the scale, because the adverse effect was life-threatening to the consumer. The product was not reintroduced. The aetiological investigation was judged to be complete, and all the common causes – such as obstructive nephropathy, functional origin of acute kidney injury and an autoimmune cause – were ruled out.

The Matcha Slim® product was therefore deemed very likely responsible for the occurrence of the acute kidney injury, i.e. I4 on a scale ranging from I0 (excluded) to I4 (very likely).

NO IDENTICAL CASES DESCRIBED TO DATE

To date, no other reports concerning the Matcha Slim® product have been recorded by the nutriviigilance scheme. A literature search was carried out to identify cases of acute kidney injury in humans associated with the active ingredients in Matcha Slim®: taurine, vitamins A, B1, B3, B5, B6, B8, B9, B12, C, D3 and E, green tea (*Camellia sinensis*), marsh mallow (*Althaea officinalis*) and grapefruit (*Citrus maxima*). Although it found no cases of acute kidney injury, the analysis of the literature nevertheless yielded a number of explanatory hypotheses concerning the involvement of green tea, vitamin C and taurine in the occurrence of the adverse effects reported here.

Green tea is a plant that contains oxalates, between 300 mg and 2000 mg per 100 g of dry matter. Oxalate or oxalic acid can form insoluble crystals in the form of calcium oxalate. A diet providing 10 mg of oxalates per 2500 kcal could lead to hyperoxaluria and thus a risk of oxalate crystal formation. In the literature, there are numerous cases of oxalic nephropathy and acute kidney injury following excessive consumption of foods containing oxalates, in subjects with or without a history of kidney disease or other risk factors (diabetes, intestinal transit disorders).

In "matcha" form, green tea is ground and ingested, unlike traditional green tea preparations where only the infusion water is consumed. Matcha Slim® contains 200 mg of green tea per 7 g of product, which is the daily dose recommended by the manufacturer. However, 200 mg of green tea provides a maximum of 4 mg of oxalates. This level of daily oxalate intake remains below the doses found in the literature to cause oxalate crystal formation.

Vitamin C is also a precursor of oxalate. Cases of oxalic nephropathy due to excessive vitamin C consumption, of between 480 mg and 6.5 g per day, have been reported in the literature. However, these intakes are much higher than those provided by the daily dose of Matcha Slim® (5 mg of vitamin C per day).

As for taurine, in patients with kidney failure, consumption of 50 mg/kg/d seems to cause it to accumulate in plasma due to low renal excretion. Four cases of acute kidney injury associated with excessive consumption of so-called energy drinks have been reported in the literature. Among the ingredients, the authors identify taurine as a possible cause, with reported taurine intakes of between 4.6 g and 12 g per day. By comparison, Matcha Slim® provides 0.5 g a day.

PEOPLE AT RISK SHOULD LIMIT THEIR OXALATE CONSUMPTION

The consumption of large quantities of green tea, vitamin C and taurine appears to be responsible for the renal adverse effects. Although the quantities provided by Matcha Slim® are comparatively very small, consumption of this product represents an additional daily intake in a diet that may already include high levels of these three components.

The literature reports numerous cases of oxalic nephropathy leading to acute kidney injury in people with or without risk factors (diabetes, chronic renal disease, intestinal transit disorders) but who have consumed excessive amounts of foods rich in oxalates or vitamin C. Excessive taurine intake could also be the cause of the acute kidney injury, but by a different mechanism.

Thus, combining such sources of oxalates in a beverage consumed daily could constitute a risk factor for developing acute kidney injury. People with risk factors for acute kidney injury should limit their consumption of foods high in oxalates (spinach, rhubarb, beetroot) and beverages containing oxalates, on top of their normal diet.

CONCLUSIONS AND RECOMMENDATIONS

The causality of the Matcha Slim® product in the occurrence of the acute kidney injury in an individual with chronic kidney disease was deemed very likely.

In order to prevent further renal adverse effects in individuals with risk factors such as chronic kidney disease, ANSES recommends that they limit their consumption of foods and beverages containing oxalates.

More generally, with regard to the consumption of food supplements and foods fortified with substances for nutritional or physiological purposes, such as Matcha Slim®, ANSES reminds consumers to:

- notify a healthcare professional of any adverse effect occurring after consumption;
- comply with the conditions of use specified by the manufacturer;
- avoid taking such products on a multiple, prolonged or repeated basis throughout the year without having sought the advice of a healthcare professional (doctor, dietician, etc.);
- exercise great vigilance with regard to improper claims;
- be very vigilant when purchasing products sold on certain websites or social media, which are subject to less stringent monitoring.

Healthcare professionals are invited to report to the nutrivigilance scheme any cases of adverse effects they suspect are associated with the consumption of food supplements or fortified foods (<https://www.nutrivigilance-anses.fr>).

FIND OUT MORE

[1] ANSES. 2024. Opinion of the French Agency for Food, Environmental and Occupational Health & Safety on "a case of acute kidney injury associated with consumption of the product Matcha Slim®" (Request 2023-VIG-0159). ANSES (Maisons-Alfort), 15 p. <https://www.anses.fr/fr/system/files/NUT2023VIG0159.pdf>

[2] ANSES. 2019. Revised Opinion of the French Agency for Food, Environmental and Occupational Health & Safety on the updating of the method for determining causality in reports of adverse effects in nutrivigilance (Request 2018-SA-0026). Maisons-Alfort: ANSES. <https://www.anses.fr/fr/system/files/NUT2018SA0026.pdf>



Sandrine Wetzler (Anses)

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ANSES, which is responsible for several health vigilance schemes (pharmacovigilance of veterinary medicinal products, nutriviigilance, phytopharmacovigilance, toxicovigilance, vigilance for occupational and environmental diseases, cosmetovigilance and tattoovigilance), reports on its vigilance activities through a dedicated newsletter: **Vigil'Anses.**

Reflecting the latest news from each of the vigilance schemes, this four-monthly newsletter presents the main results of the Agency's work as part of its vigilance missions, in conjunction with its partners, professional networks and expert groups, along with the actions undertaken. The articles, which are deliberately short, are aimed at all environmental and occupational health players: public authorities, health agencies, ANSES's expert appraisal partner organisations and institutes, managers of prevention policies, the scientific community, professionals, associations and users. They encourage the interested reader to read the publications, opinions or reports available on the Internet for further information.



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**FRENCH AGENCY FOR FOOD, ENVIRONMENTAL
AND OCCUPATIONAL HEALTH & SAFETY**

14 rue Pierre et Marie Curie
94701-F Maisons-Alfort Cedex

www.anses.fr